

**18 U.S.C. 922(o): Transfer or possession of machinegun**

**26 U.S.C. 5845(b): Definition of machinegun**

**18 U.S.C. 921(a)(23): Definition of machinegun**

*The definition of machinegun in the National Firearms Act and the Gun Control Act includes a part or parts that are designed and intended for use in converting a weapon into a machinegun. This language includes a device that, when activated by a single pull of the trigger, initiates an automatic firing cycle that continues until the finger is released or the ammunition supply is exhausted.*

**ATF Rul. 2006-2**

The Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) has been asked by several members of the firearms industry to classify devices that are exclusively designed to increase the rate of fire of a semiautomatic firearm. These devices, when attached to a firearm, result in the firearm discharging more than one shot with a single function of the trigger. ATF has been asked whether these devices fall within the definition of machinegun under the National Firearms Act (NFA) and Gun Control Act of 1968 (GCA). As explained herein, these devices, once activated by a single pull of the trigger, initiate an automatic firing cycle which continues until either the finger is released or the ammunition supply is exhausted. Accordingly, these devices are properly classified as a part “*designed and intended solely and exclusively, or combination of parts designed and intended, for use in converting a weapon into a machinegun*” and therefore machineguns under the NFA and GCA.

The National Firearms Act (NFA), 26 U.S.C. Chapter 53, defines the term “firearm” to include a machinegun. Section 5845(b) of the NFA defines “machinegun” as “*any weapon which shoots, is designed to shoot, or can be readily restored to shoot, automatically more than one shot, without manual reloading, by a single function of the trigger. The term shall also include the frame or receiver of any such weapon, any part designed and intended solely and exclusively, or combination of parts designed and intended, for use in converting a weapon into a machinegun, and any combination of parts from which a machinegun can be assembled if such parts are in the possession or under the control of a person.*” The Gun Control Act of 1968 (GCA), 18 U.S.C. Chapter 44, defines machinegun identically to the NFA. 18 U.S.C. 921(a)(23). Pursuant to 18 U.S.C. 922(o), machineguns manufactured on or after May 19, 1986, may only be

transferred to or possessed by Federal, State, and local government agencies for official use.

ATF has examined several firearms accessory devices that are designed and intended to accelerate the rate of fire for semiautomatic firearms. One such device consists of the following components: two metal blocks; the first block replaces the original manufacturer's V-Block of a Ruger 10/22 rifle and has attached two rods approximately  $\frac{1}{4}$  inch in diameter and approximately 6 inches in length; the second block, approximately 3 inches long,  $1\frac{3}{8}$  inches wide, and  $\frac{3}{4}$  inch high, has been machined to allow the two guide rods of the first block to pass through. The second block supports the guide rods and attaches to the stock. Using  $\frac{1}{4}$  inch rods, metal washers, rubber and metal bushings, two collars with set screws, one coiled spring, C-clamps, and a split ring, the two blocks are assembled together with the composite stock. As attached to the firearm, the device permits the entire firearm (receiver and all its firing components) to recoil a short distance within the stock when fired. A shooter pulls the trigger which causes the firearm to discharge. As the firearm moves rearward in the composite stock, the shooter's trigger finger contacts the stock. The trigger mechanically resets, and the device, which has a coiled spring located forward of the firearm receiver, is compressed. Energy from this spring subsequently drives the firearm forward into its normal firing position and, in turn, causes the trigger to contact the shooter's trigger finger. Provided the shooter maintains finger pressure against the stock, the weapon will fire repeatedly until the ammunition is exhausted or the finger is removed. The assembled device is advertised to fire approximately 650 rounds per minute. Live-fire testing of this device demonstrated that a single pull of the trigger initiates an automatic firing cycle which continues until the finger is released or the ammunition supply is exhausted.

As noted above, a part or parts designed and intended to convert a weapon into a machinegun, *i.e.*, a weapon that will shoot automatically more than one shot, without manual reloading, by a single function of the trigger, is a machinegun under the NFA and GCA. ATF has determined that the device constitutes a machinegun under the NFA and GCA. This determination is consistent with the legislative history of the National Firearms Act in which the drafters equated "single function of the trigger" with "single pull of the trigger." *See, e.g., National Firearms Act: Hearings Before the Comm. on Ways and Means, House of Representatives, Second Session on H.R. 9066, 73<sup>rd</sup> Cong.*, at 40 (1934). Accordingly, conversion parts that, when installed in a semiautomatic rifle, result in a weapon that shoots more than one shot, without manual reloading, by a single pull of the trigger, are a machinegun as defined in the National Firearms Act and the Gun Control Act.

*Held*, a device (consisting of a block replacing the original manufacturer's V-Block of a Ruger 10/22 rifle with two attached rods approximately  $\frac{1}{4}$  inch in diameter and approximately 6 inches in length; a second block, approximately 3 inches long,  $1\frac{3}{8}$  inches wide, and  $\frac{3}{4}$  inch high, machined to allow the two guide rods of the first block to pass through; the second block supporting the guide rods and attached to the stock; using  $\frac{1}{4}$  inch rods; metal washers; rubber and metal bushings; two collars with set screws; one coiled spring; C-clamps; a split ring; the two blocks assembled together with the

composite stock) that is designed to attach to a firearm and, when activated by a single pull of the trigger, initiates an automatic firing cycle that continues until either the finger is released or the ammunition supply is exhausted, is a machinegun under the National Firearms Act, 26 U.S.C. 5845(b), and the Gun Control Act, 18 U.S.C. 921(a)(23).

*Held further*, manufacture and distribution of any device described in this ruling must comply with all provisions of the NFA and the GCA, including 18 U.S.C. 922(o).

To the extent that previous ATF rulings are inconsistent with this determination, they are hereby overruled.

Date approved: December 13, 2006

Michael J. Sullivan  
Director



**U.S. Department of Justice**

Bureau of Alcohol, Tobacco,  
Firearms and Explosives

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*Martinsburg, WV 25405*

[www.atf.gov](http://www.atf.gov)

903050:MRC  
3311/301071

October 31, 2013

Mr. Michael Stakes  
President  
Tactical Fire Control, Inc

[REDACTED]

Dear Mr. Stakes,

This is in reference to your correspondence (including copy of a patent application), with accompanying AR-type fire-control components, received by the Firearms Technology Branch (FTB), Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF). In your cover letter, you asked FTB to examine this “3MR™” trigger assembly (see enclosed photo) and determine its classification.

For your reference in this matter, the National Firearms Act, 26 U.S.C. Section 5845(b), defines “**machinegun**” as—

*...any weapon which shoots, is designed to shoot, or can be readily restored to shoot, automatically more than one shot, without manual reloading, by a single function of the trigger. The term shall also include the frame or receiver of any such weapon, any part designed and intended solely and exclusively, or combination of parts designed and intended, for use in converting a weapon into a machinegun, and any combination of parts from which a machinegun can be assembled if such parts are in the possession or under the control of a person.*

As indicated, your prototype trigger has three modes: safe mode, a match grade semi-automatic mode, and another match grade semiautomatic mode with a positive reset characteristic. In support of this product, you point out that it will provide tactical and competition shooters with a “safer, faster, and more reliable trigger group.” It is also intended to provide positive resets between each shot.

The FTB examination confirmed that the trigger unit consists of a housing, hammer, trigger, disconnector, selector, springs, and reset lever that are designed to be used in an AR-15 type platform. Our examination disclosed that when the selector is placed in the vertical position (apex at 12 o'clock), the trigger, disconnector, and hammer function as any AR-semiautomatic type trigger is designed to do. Further examination also showed that when the selector was placed in the horizontal position (apex at 3 o'clock), the reset lever pivots forward, and the hammer engages/contacts the lever during the cycling of the rifle. In this position, the hammer contacts the reset lever during cocking, which applies force to the trigger, forces the shooter's finger forward, and allows the trigger to reset rapidly.

In the course of our evaluation, FTB personnel installed the submitted 3MR™ trigger into an AR-15 type rifle housed in the ATF National Firearms Collection for test firing. During this phase, a function test was performed before live-fire was conducted. The 3MR™ functioned only semi automatically during both the field test and live-firing.

In conclusion, FTB has determined that the 3MR™ trigger assembly is not a part or combination of parts that will convert a semiautomatic firearm into a machinegun. Your sample will be returned via the FedEx account number provided in your cover letter.

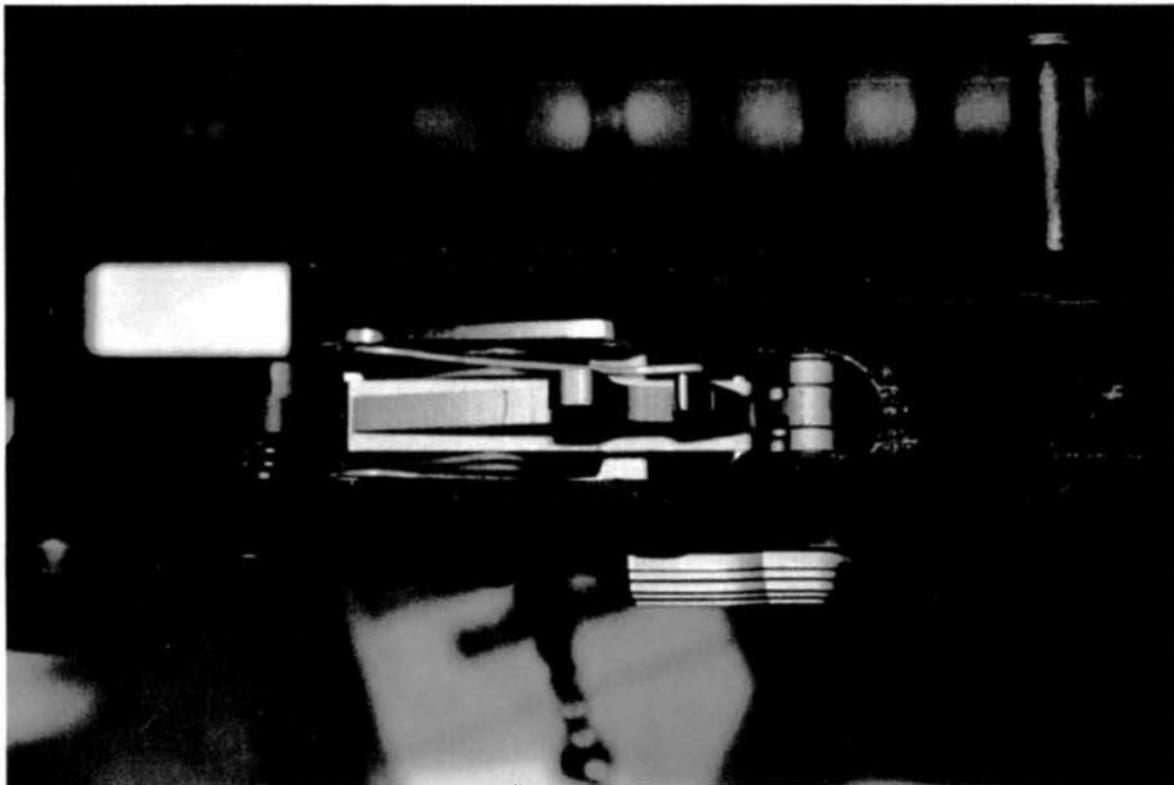
We thank you for your inquiry and trust the foregoing has been responsive to your evaluation request.

Sincerely yours,

  
Earl Griffith  
Chief, Firearms Technology Branch

Enclosure

Tactical Fire Control 3MR™ Trigger





**Tactical Fire Control, Inc.**

EVAL. 301-071-MRC

June 24, 2013

Chief Firearms Tech Branch  
244 Needy Road  
Martinsburg, WV 25405

RECEIVED  
JUN 27 2013  
BY: ..... F.T.B. ....

Dear Tech Branch:

Enclosed you will find the completed patent application, a prototype for testing and a flash drive. The flash drive has a digital version of the patent application, patent drawings and a file containing a series of photos that capture the operation of the trigger step by step in the reset mode. Also included is a KNS anti-walk pin set for installing the trigger. The reason for submitting the 3MRTM trigger for classification is the fact that it contains three modes: safe mode, a match grade semi-automatic mode and another match grade semi-automatic mode with a positive reset characteristic. The design was intended not to be considered a machinegun as defined by the NFA handbook section 2.1.6

*Firearms within the definition of machinegun include weapons that shoot, are designed to shoot, or can be readily restored to shoot, automatically more than one shot without manual reloading by a single function of the trigger.*

This trigger will provide tactical and competition shooters with a safer, faster and more reliable trigger group. The main advantage of the reset characteristic is to provide a positive reset between rounds avoiding what tactical shooters refer to as "trigger lock" during a high stress situation. This also reduces the split times between rounds without having to make the trigger pull rate super light which leads to an unsafe feeling trigger. We would like to thank you in advance for your time.

Sincerely,

Michael A. Stakes

President – Tactical Fire Control, Inc.

Enclosure: Patent Application, Patent Drawings, Flash Drive, Prototype and KNS Anti-Walk Pins. We would like this to be returned to the address below after classification using our FedEx account number: 2915-2701-9

Proud  
Supporter



ATF0007  
WOUNDED WARRIOR  
PROJECT

1

## A TRIGGER MECHANISM

2

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## FIELD OF THE INVENTION

4

The present invention relates to trigger mechanisms.

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## BACKGROUND OF THE INVENTION

7 There are numerous trigger mechanisms capable of being locked in safe, semi-  
8 automatic, burst, and fully automatic operation. Different variations of rifles will allow  
9 some or all of the various modes of operation. Selector mechanisms have been  
10 developed for use with the trigger mechanisms to select between some or all of the  
11 various modes.

12 In firearms limited to safe and semi-automatic modes of operation, one of the  
13 drawbacks to the trigger mechanism occurs when the hammer is returned to the cocked  
14 position by the bolt carrier. After firing a round, the bolt carrier moves rearwardly,  
15 contacting the hammer and pivoting the hammer backwards into the cocked position.  
16 This action results in the sear hook at the striking end of the hammer directly striking the  
17 hammer-receiving surface of the disconnector and transferring energy to an operator's  
18 finger upon the trigger in the form of a sharp snap or forward movement of the trigger.  
19 After repeated firings of the weapon, this trigger snap can begin to cause bruising or other  
20 injury to the finger, making continued firing uncomfortable. Another drawback to the  
21 trigger mechanism occurs after firing when the trigger nose resets into the trigger notch  
22 of the hammer to prevent forward motion of the hammer preparatory to firing by another  
23 trigger pull, where there is a substantial pause as the hammer travels rearwardly from the

1     cocked position, to the past-cocked position, and then forwardly to the cocked position  
2     preparatory to firing by another trigger pull. This pause inherently limits the speed of  
3     repeated trigger pulls in the semi-automatic mode of operation, which, for many  
4     competitive shooters, is not satisfactory. Accordingly, there is a need in the art for a  
5     trigger mechanism that limits trigger snap and improves the trigger-to-hammer reset  
6     between trigger pulls in the semi-automatic mode of operation.

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## SUMMARY OF THE INVENTION

2        According to the principle of the invention, a trigger mechanism includes a trigger  
3        disconnector assembly having a trigger nose, and a disconnector having a disconnector  
4        hook. A reset lever is mounted for pivotal movement between open and closed positions.  
5        The trigger disconnector assembly is mounted for pivotal movement between charged  
6        and discharged orientations, the charged orientation being a set position of the trigger  
7        nose and a disengaged position of the disconnector hook, and the discharged orientation  
8        being a released position of the trigger nose and an engaged position of the disconnector  
9        hook. A hammer includes a striking end, a hammer disconnect notch, a pivot end  
10      pivotable about a hammer pivot between a firing position of the striking end, a cocked  
11      position of the striking end, and a past-cocked position of the striking end, and a trigger  
12      notch formed in the pivot end for receiving the trigger nose in the cocked position of the  
13      hammer. The trigger disconnector assembly is in mechanical communication with the  
14      reset lever, the striking end of the hammer strikes the reset lever in the past-cocked  
15      position of the hammer pivoting the reset lever from the open position to the closed  
16      position, the reset lever acting on the trigger disconnector assembly to pivot the trigger  
17      disconnector assembly from the discharged orientation to the charged orientation when  
18      the reset lever moves from the open position to the closed position, to position the trigger  
19      nose in the set position in preparation to be received by the trigger notch in the cocked  
20      position of the hammer and to position the disconnector in the disengaged position of the  
21      disconnector hook relative to the hammer disconnect notch. A spring keeps tension on the  
22      reset lever urging the reset lever toward the closed position. The reset lever isolates the  
23      hammer from the trigger disconnector assembly, preventing the hammer from striking the

1 trigger disconnector assembly in the past cocked position of the hammer.

2 According to the principle of the invention, a trigger mechanism includes a trigger  
3 disconnector assembly having a trigger nose, and a disconnector having a disconnector  
4 hook and a cam surface. A reset lever is mounted for pivotal movement between open  
5 and closed positions. The trigger disconnector assembly is mounted for pivotal  
6 movement between charged and discharged orientations, the charged orientation being a  
7 set position of the trigger nose and a disengaged position of the disconnector hook, and  
8 the discharged orientation being a released position of the trigger nose and an engaged  
9 position of the disconnector hook. A hammer includes a striking end including a striking  
10 surface and an opposed hammer tail, a hammer disconnect notch, a pivot end pivotable  
11 about a hammer pivot between a forward position of the striking end, a cocked position  
12 of the striking end, and a past-cocked position of the striking end, and a trigger notch  
13 formed in the pivot end for receiving the trigger nose in the set position of the trigger  
14 nose and the cocked position of the hammer. The cam surface of the trigger disconnector  
15 assembly is in mechanical communication with the reset lever, the hammer tail of the  
16 striking end of the hammer strikes the reset lever in the past-cocked position the hammer  
17 pivoting the reset lever from the open position to the closed position, the reset lever  
18 acting on the cam surface to pivot the trigger disconnector assembly from the discharged  
19 orientation to the charged orientation when the reset lever moves from the open position  
20 to the closed position, to position the trigger nose in the set position in preparation to be  
21 received by the trigger notch in the cocked position of the hammer and to position the  
22 disconnector in the disengaged position of the disconnector hook relative to the hammer  
23 disconnect notch. A spring keeps tension on the reset lever urging the reset lever toward

1 the closed position. The reset lever isolates the hammer from the trigger disconnector  
2 assembly, preventing the hammer from striking the trigger disconnector assembly in the  
3 past cocked position of the hammer. The hammer tail of the hammer strikes the reset  
4 lever in the past-cocked position of the hammer at a location between the cam surface  
5 and the disconnector hook.

6 According to the principle of the invention, a trigger mechanism includes a trigger  
7 body having a trigger nose and a trigger pivot for pivotally coupling the trigger body to a  
8 firearm for movement of the trigger nose between set and released positions. A reset  
9 lever is mounted for pivotal movement between open and closed positions. A  
10 disconnector has a disconnector hook, and a disconnector pivot pivotally coupling the  
11 disconnector to the trigger pivot for movement of the disconnector hook between  
12 disengaged and engaged positions in response to pivotal movement of the trigger body  
13 between the set and released positions of the trigger nose, respectively. A hammer  
14 includes a striking end, a hammer disconnect notch, a pivot end pivotable about a  
15 hammer pivot between a firing position of the striking end, a cocked position of the  
16 striking end, and a past-cocked position of the striking end, and a trigger notch formed in  
17 the pivot end for receiving the trigger nose in the cocked position of the hammer. The  
18 disconnector is in mechanical communication with the reset lever, the striking end of the  
19 hammer strikes the reset lever in the past-cocked position of the hammer pivoting the  
20 reset lever from the open position to the closed position, the reset lever acting on the  
21 disconnector to concurrently pivot the disconnector from the engaged position of the  
22 disconnector hook to the disengaged position of the disconnector hook and the trigger  
23 body from the released position of the trigger nose to the set position of the trigger nose

1 in preparation to be received by the trigger notch in the cocked position of the hammer  
2 when the reset lever moves from the open position to the closed position. A spring keeps  
3 tension on the reset lever urging the reset lever toward the closed position. The reset  
4 lever isolates the hammer from the trigger body and the disconnector, preventing the  
5 hammer from striking the trigger body and the disconnector in the past cocked position of  
6 the hammer.

7 According to the principle of the invention, a trigger mechanism includes a trigger  
8 body having a trigger nose and a trigger pivot for pivotally coupling the trigger body to a  
9 firearm for movement of the trigger nose between set and released positions. A reset  
10 lever is mounted for pivotal movement between open and closed positions. A  
11 disconnector has a disconnector lever, a disconnector hook, and a disconnector pivot  
12 pivotally coupling the disconnector to the trigger pivot for movement of the disconnector  
13 hook between disengaged and engaged positions in response to pivotal movement of the  
14 trigger body between the set and released positions of the trigger nose, respectively. A  
15 hammer includes a striking end, a hammer disconnect notch, a pivot end pivotable about  
16 a hammer pivot between a firing position of the striking end, a cocked position of the  
17 striking end, and a past-cocked position of the striking end, and a trigger notch formed in  
18 the pivot end for receiving the trigger nose in the cocked position of the hammer. The  
19 disconnector lever of the disconnector is in mechanical communication with the reset  
20 lever, the striking end of the hammer strikes the reset lever in the past-cocked position of  
21 the hammer pivoting the reset lever from the open position to the closed position, the  
22 reset lever acting on the disconnector lever to concurrently pivot the disconnector from  
23 the engaged position of the disconnector hook to the disengaged position of the

1 disconnector hook and the trigger body from the released position of the trigger nose to  
2 the set position of the trigger nose in preparation to be received by the trigger notch in the  
3 cocked position of the hammer when the reset lever moves from the open position to the  
4 closed position. A spring keeps tension on the reset lever urging the reset lever toward  
5 the closed position. The reset lever isolates the hammer from the trigger body and the  
6 disconnector, preventing the hammer from striking the trigger body and the disconnector  
7 in the past cocked position of the hammer. The striking end of the hammer strikes the  
8 reset lever in the past-cocked position of the hammer at a location between the  
9 disconnector lever and the disconnector hook.

10 According to the principle of the invention, a trigger mechanism includes a trigger  
11 body having a trigger nose and a trigger pivot for pivotally coupling the trigger body to a  
12 firearm for movement of the trigger nose between set and released positions. A reset  
13 lever is mounted for pivotal movement between open and closed positions. A  
14 disconnector has a disconnector hook, a cam surface, and a disconnector pivot pivotally  
15 coupling the disconnector to the trigger pivot for movement of the disconnector hook  
16 between disengaged and engaged positions in response to pivotal movement of the trigger  
17 body between the set and released positions of the trigger nose, respectively. A hammer  
18 includes a striking end, a hammer disconnect notch, a pivot end pivotable about a  
19 hammer pivot between a firing position of the striking end, a cocked position of the  
20 striking end, and a past-cocked position of the striking end, and a trigger notch formed in  
21 the pivot end for receiving the trigger nose in the cocked position of the hammer. The  
22 cam surface of the disconnector is in mechanical communication with the reset lever, the  
23 striking end of the hammer strikes the reset lever in the past-cocked position of the

1       hammer pivoting the reset lever from the open position to the closed position, the reset  
2       lever acting on the cam surface to concurrently pivot the disconnector from the engaged  
3       position of the disconnector hook to the disengaged position of the disconnector hook and  
4       the trigger body from the released position of the trigger nose to the set position of the  
5       trigger nose in preparation to be received by the trigger notch in the cocked position of  
6       the hammer when the reset lever moves from the open position to the closed position. A  
7       spring keeps tension on the reset lever urging the reset lever toward the closed position.  
8       The reset lever isolates the hammer from the trigger body and the disconnector,  
9       preventing the hammer from striking the trigger body and the disconnector in the past  
10      cocked position of the hammer. The striking end of the hammer strikes the reset lever in  
11      the past-cocked position of the hammer at a location between the cam surface and the  
12      disconnector hook.

13           According to the principle of the invention, a trigger assembly with a hammer  
14      having a trigger notch, a trigger body has a trigger nose, a trigger tail, and a trigger, the  
15      trigger nose for receiving the trigger notch in a cocked position of the hammer and a set  
16      position of the trigger body and for releasing the trigger nose when the trigger body is  
17      moved a travel distance from the set position to a fired position, a disconnector coupled  
18      between the hammer and the trigger body, and a selector movable between a first position  
19      and a second position for adjusting the travel distance of the trigger body. The selector  
20      has a first stop aligned with the tail of the trigger body in the first position, and a second  
21      stop aligned with the tail of the trigger body in the second position. The first stop is  
22      separated from tail of the trigger body a first distance in the set position of the trigger  
23      body in the first position of the selector, and the second stop is separated from tail of the

1 trigger body a second distance in the set position of the trigger body in the second  
2 position of the selector. In the first position of the selector and the fired position of the  
3 trigger body the first distance between the first stop and the tail of the trigger body is  
4 closed and the tail contacts the first stop, and movement of the trigger body is arrested by  
5 the tail contacting the first stop. In the second position of the selector and the fired  
6 position of the trigger body the second distance between the second stop and the tail of  
7 the trigger body is closed and the tail contacts the second stop, and movement of the  
8 trigger body is arrested by the tail contacting the second stop. The second distance is less  
9 than the first distance, wherein the travel distance of the trigger body in the second  
10 position of the selector is less than the travel distance of the trigger body in the first  
11 position of the selector.

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## BRIEF DESCRIPTION OF THE DRAWINGS

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Referring to the drawings:

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FIG. 1 is a perspective view of a trigger mechanism constructed and arranged in accordance with the principle of the invention, the trigger mechanism including a trigger body, a disconnector, a hammer, a reset lever, and a selector, and the trigger mechanism being shown as it would appear in a safe mode of operation;

7

FIG. 2 is a view similar to that of FIG. 1 with portions thereof being shown in phantom outline for illustrative purposes;

9

FIG. 2A is a bottom perspective view of the trigger body, the disconnector, and the hammer of the embodiment of FIG. 1;

11

FIG. 3 is a partially exploded perspective view of the trigger body, the disconnector, the hammer, and the reset lever of the trigger mechanism of FIG. 1;

13

FIG. 4 is a view of the trigger body, the disconnector, the hammer, the assisted reset lever, and the selector of the trigger mechanism of FIG. 1 in a semi-automatic mode of operation;

16

FIG. 5 is a view similar to that of FIG. 4 illustrating the trigger mechanism as it would appear in an assisted reset semi-automatic mode of operation;

18

FIGS. 6-9 show a sequence of operation of the trigger body, the disconnector, the hammer, the reset lever, and the selector of the trigger mechanism of FIG. 1 in a semi-automatic mode of operation;

21

FIGS. 10-14 show a sequence of operation of the trigger body, the disconnector, the hammer, the reset lever, and the selector of the trigger mechanism of FIG. 1 in an assisted-reset semi-automatic mode of operation;

1           FIG. 15 is a fragmented end elevation view of the trigger mechanism of FIG. 1  
2       illustrating contact between a cam of the selector and the reset lever in the semi-  
3       automatic mode of operation of the trigger assembly;

4           FIG. 16 is a fragmented end elevation view of the trigger mechanism of FIG. 1  
5       illustrating contact between a cam of the selector and the reset lever in the assisted-reset  
6       semi-automatic mode of operation of the trigger assembly;

7           FIG. 17 is a side elevation view of the trigger body, the selector, and the hammer  
8       of the embodiment of FIG. 4 illustrating the selector in the semi-automatic mode of  
9       operation, and illustrating the trigger body in a set position holding the hammer in a  
10      cocked position;

11           FIG. 18 is a view of the embodiment of FIG. 17 illustrating the trigger body as it  
12      would appear in a pulled or fired position and a tail of the trigger body shown as it would  
13      appear contacting a first stop of the selector;

14           FIG. 19 is a side elevation view of the trigger body, the selector, and the hammer  
15       of the embodiment of FIG. 5 illustrating the selector in the assisted reset semi-automatic  
16       mode of operation, and illustrating the trigger body in a set position holding the hammer  
17       in a cocked position; and

18           FIG. 20 is a view of the embodiment of FIG. 19 illustrating the trigger body as it  
19      would appear in a pulled or fired position and a tail of the trigger body shown as it would  
20      appear contacting a second stop of the selector.

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## DETAILED DESCRIPTION

2        Known trigger mechanisms used with various semi-automatic firearms that fire a  
3        single round each time the trigger is pulled and that have select fire capabilities that  
4        permit selection between safe and semi-automatic modes of operation include a trigger  
5        assembly having a trigger, a hammer having a sear hook, a disconnector, and a sear  
6        assembly. Operation of such a mechanism is well known to those skilled in the art and  
7        will not be described in detail, other than to describe how, after firing, the hammer is  
8        pivoted rearwardly by the action of the bolt carrier. As the hammer is moved to a cocked  
9        position and beyond to a past-cocked position, from the cocked position the hammer  
10      disconnect notch clips past the disconnector hook of the disconnector and over-travels to  
11      the past-cocked position where the portion of the hammer having the sear hook strikes the  
12      disconnector which in turn imparts the energy from the striking hammer to a rear portion  
13      of the trigger assembly, causing the trigger to sharply move or snap forward to reset the  
14      trigger nose relative to the trigger notch formed in the pivot end of the hammer where the  
15      hammer is retained in the cocked position by the trigger nose preparatory to firing by  
16      another trigger pull. The over-travel of the hammer from the cocked position to the past-  
17      cocked position delays the trigger-to-hammer reset, which limits the speed of semi-  
18      automatic fire.

19        To overcome this problem, a trigger mechanism, generally designated 20, is  
20      provided. It will be understood that trigger mechanism 20 is intended to be employed  
21      with any of the various semi-automatic firearms that fire a single round each time the  
22      trigger is pulled and that have select fire capabilities. It will also be understood that  
23      trigger mechanism 20 is carried by a lower receiver of a firearm. A lower receiver is not

1 shown, as they are well known in the art and trigger mechanism 20 is carried in a  
2 conventional manner. Trigger mechanism 20 may also be formed as a drop-in trigger  
3 mechanism, as is the case with after-market trigger mechanisms.

4 This particular trigger mechanism 20 allows selection between safe, semi-  
5 automatic, and assisted-reset semi-automatic modes of fire or operation. The assisted-  
6 reset semi-automatic mode of operation is a form of a semi-automatic mode of operation.  
7 Looking in relevant part to FIGS. 1-5, trigger mechanism 20 includes a trigger assembly  
8 21 having a trigger body 23 with a trigger nose 24 at a head 24A of trigger body 23, a  
9 notch 25 at a tail 25A, and a trough 26 formed therein extending from tail 25A of trigger  
10 body 23 across a pivot 28 to just short of trigger nose 24 at head 24A. Trigger nose 24 is  
11 a part of head 24A of trigger body 23, and notch 25 is a part of tail 25A of trigger body  
12 23. A trigger 27 extends from trigger body 23 generally at pivot 28. A disconnector 30  
13 is positioned within trough 26 and is pivotally coupled to trigger assembly 21 at pivot 28.  
14 Disconnector 30 is a semi-automatic disconnector and is coupled between hammer 40  
15 and trigger body 23. Disconnector 30 includes a rearwardly extending disconnector lever  
16 32, and an upwardly extending disconnector hook 33. Disconnector lever 32 is  
17 positioned within trough 26 and includes a cam surface 35. Disconnector 30 pivots about  
18 a pivot or pivot point 38 denoted in FIG. 3, concurrent with pivot 28 of trigger assembly  
19 22 as is known in the art. In this trigger mechanism 20, trigger body 23 and disconnector  
20 30 concurrently pivot about pivot 28 and pivot point 38. Trigger assembly 21 has the  
21 customary and well-known trigger spring that acts on trigger body 23 so as to keep  
22 constant tension on trigger body 23 and thus trigger 27, the details of which are well-  
23 known to the skilled person. According to this disclosure, trigger body 23 and its various

1 components and disconnector 30 and its various components cooperate to form a trigger  
2 disconnector assembly, which is denoted generally at 39.

3 Trigger mechanism 20 also includes a hammer 40 coupled for pivotal movement  
4 at a pivot 42 defined at a pivot end 43 of hammer 40 from a forward or firing position  
5 rearwardly to a cocked position and beyond to a past-cocked position as the rearward  
6 most position. Trigger assembly 21 has the customary and well-known hammer spring  
7 48 that acts on hammer 40 so as to keep constant tension on hammer 40, the details of  
8 which are well-known to the skilled person. Hammer 40 further includes a striking  
9 surface 44 formed in a striking end 45. Striking end 45 opposes pivot end 43, and has a  
10 hammer tail 46 opposite to striking surface 44. A trigger notch 49 is formed in pivot end  
11 43. Trigger nose 24 is received in trigger notch 49, holding hammer 40 in the cocked  
12 position prior to firing. In this trigger mechanism 20, trigger notch 49 is formed  
13 perpendicular to the axis of rotation, directly in line with the center of pivot point 42.

14 Trigger mechanism 20 further includes an assisted-reset lever 50. Assisted-reset  
15 or reset lever 50 is positioned within trough 26 proximate to notch 25 of tail 25A and  
16 rearwardly of, or otherwise behind, disconnector lever 32 of disconnector 30 between  
17 selector 70 and disconnector lever 32 of disconnector 30 of disconnector assembly 39.  
18 Reset lever 50 includes two arms 52 and 53 connected at an angle at an intermediate  
19 portion, mid-section, or middle 54 of reset lever 50. Arms 52 and 53 are lever arms and  
20 are angularly offset relative to one another like a boomerang. In this reset lever 50, the  
21 angle between arms 52 and 53 is approximately 110 degrees, meaning 110 degrees +/- 1-  
22 6 degrees variation as may be desired. Reset lever 50 is pivotally coupled to trigger body  
23 23 of trigger assembly 21 at a pivot 56. Arm 52 is a rearwardly extending arm that

1 extends rearwardly through trough 26 from pivot 56 at tail 25A of trigger body 23. Arm  
2 53 is an upwardly extending arm that extends upwardly from pivot 56 and trough 26 at  
3 tail 25A of trigger body 23. Reset lever 50 pivots or pivotally moves at pivot 56 in the  
4 directions of double arrowed line A in FIG. 1 and 2 between what is considered an  
5 inoperative position as shown in FIGS. 1, 2, 4, and 6-9, and what is considered an  
6 operative position as shown in FIGS. 3, 5, and 10-14 relative to the trigger disconnector  
7 assembly 39 and, more specifically, relative to cam surface 35 of disconnector 30 of  
8 trigger disconnector assembly 39.

9       In the inoperative position of reset lever 50, arm 53 is in an inoperative position,  
10 which is an aft or rearward upright position toward selector 70 and away from trigger  
11 disconnector assembly 39. In a further and more specific aspect, in the inoperative  
12 position of reset lever 50, arm 53 is in an inoperative position, which is an aft or rearward  
13 upright position toward selector 70 and away from cam surface 35 of disconnector 30 of  
14 trigger disconnector assembly 39. In the inoperative position of reset lever 50, arm 53 is  
15 de-united from or otherwise not in contact with cam surface 35 and is held there by  
16 selector 70. In the operative position of reset lever 50, arm 53 is in an operative position,  
17 which is a fore or forward upright position away from selector 70 and toward and in  
18 contact against disconnector assembly 39. In a further and more specific aspect, in the  
19 operative position of reset lever 50, arm 53 is in an operative position, which is a fore or  
20 forward upright position away from selector 70 and toward and in contact against cam  
21 surface 35 of disconnector 30 of trigger disconnector assembly 39.

22       A reset lever spring 60 is coupled between reset lever 50 and trigger body 23 of  
23 trigger assembly 21. Reset lever spring 60 keeps constant tension on reset lever 50.

1 Here, reset lever spring 60 is a compression spring having active coils with a constant  
2 moduli of elasticity encircled about pivot 56, a tag end 61 connected to arm 52, and a tag  
3 end 62 connected to trigger body 23 of trigger assembly 21. Tag end 61 is received in  
4 and against a notch 61A formed in reset lever 50 between middle 54 and arm 52 and  
5 there tag end 61 is held. Tag end 62 extends downwardly through trough 26 from pivot  
6 56 and through a small opening 62A in a bottom wall of trigger body 23 and there tag end  
7 62 is held. Reset lever spring 60 constantly acts on reset lever 50 keeping constant  
8 tension on reset lever 50 constantly biasing/urging/tensioning reset lever 50 from its  
9 inoperative position relative to trigger disconnector assembly 39 to its operative position  
10 relative to trigger disconnector assembly 39.

11 Trigger mechanism 20 is a select fire trigger mechanism that has safe, semi-  
12 automatic, and assisted-reset semi-automatic modes of fire or operation, which are set or  
13 activated by a selector 70. Selector 70 is mounted for rotation so to rotate and is situated  
14 in notch 25 of trigger body 23 and has a handle 71 used to rotate selector 70 between  
15 different positions including a position corresponding to a safe mode of operation as in  
16 FIG. 1, another position corresponding to a semi-automatic mode of fire or operation as  
17 in FIG. 4, and yet another position corresponding to an assisted-reset semi-automatic  
18 mode of fire or operation as in FIG. 5, wherein these positions of selector 70 are different  
19 from one another. Trigger mechanism 20 is rendered inoperative in the safe mode of  
20 selector 70, trigger mechanism 20 is rendered operative for semi-automatic fire in the  
21 semi-automatic mode of selector 70, and trigger mechanism 20 is rendered operative for  
22 assisted-reset semi-automatic fire in the assisted-reset semi-automatic mode of selector  
23 70.

1 FIG. 1 shows trigger body 23 and disconnector 30 that form trigger disconnector  
2 assembly 39, hammer 40, reset lever 50, and selector 70 of trigger mechanism 20 in the  
3 safe mode of operation. In FIG. 1, selector 70 is in the safe mode or safe setting and  
4 trigger nose 24 is received in trigger notch 49, holding hammer 40 in the cocked position.  
5 In the safe mode position of selector 70, trigger mechanism 20 is disabled and incapable  
6 of being fired. At the same time, selector 70 engages arm 52 of reset lever 50 holding  
7 reset lever 50 in its inoperative position.

8 Selector 70 is rotated in the direction of arrowed line B in FIG. 1 from the safe  
9 mode or safe setting to the semi-automatic mode or semi-automatic setting in FIG. 4 to  
10 adjust trigger mechanism 20 from the safe mode of operation as in FIG. 1 to the semi-  
11 automatic mode of operation as in FIG. 4. At the same time, cam 75 of selector 70  
12 contacts/abuts/engages arm 52 of reset lever 50, as shown in FIG. 15, so as to act on arm  
13 52 holding reset lever 50 in its inoperative position. For reference purposes, cam 75 is  
14 illustrated in FIGS. 17, 19, and 20. As arm 52 is the thing against which cam 75 of  
15 selector 70 contacts, arm 52 of reset lever 50 is an abutment of reset lever 50 on or  
16 against which cam 75 of selector 70 abuts or contacts. In FIG. 4, selector 70 is in the  
17 semi-automatic mode or semi-automatic setting and trigger nose 24 is received in trigger  
18 notch 49, holding hammer 40 in the cocked position in preparation for firing. In the  
19 semi-automatic mode of operation of trigger mechanism 20 in preparation for firing,  
20 trigger disconnector assembly 39 is in a charged or pre-pulled orientation. In this  
21 charged or pre-pulled orientation, trigger body 23 and trigger nose 24 are each in a set  
22 position. In this set position of trigger body 23, trigger nose 24 at head 24A is received in  
23 trigger notch 49 and disconnector hook 33 is in a disengaged position being disengaged

1 from or otherwise relative to hammer disconnect notch 47 formed in hammer 40 between  
2 pivot end 43 and striking end 45 allowing forward movement of hammer 40 upon pulling  
3 trigger 27. Upon pulling trigger 27 so as to move trigger body 23 and trigger 27 a trigger  
4 pull or pulling travel distance in the semi-automatic mode of operation from the set  
5 position holding hammer 40 to the pulled or fired position releasing hammer 40, trigger  
6 disconnector assembly 39 is pivoted from the charged orientation to a discharged  
7 orientation, lowering trigger nose 24 out of trigger notch 49 from the set position to a  
8 released position, releasing hammer 40 and moving disconnector hook 33 forwardly from  
9 the disengaged position to an engaged position, as shown in FIG. 6, causing hammer 40  
10 pivot forwardly in the direction of arrowed line C to a firing position shown in FIG. 7 to  
11 fire a round, while at the same time raising tail 25A of trigger body 23 toward selector  
12 70.

13 After a round has been fired, the rearwardly moving bolt carrier engages hammer  
14 40 and pivots it rearwardly in the direction of arrowed line D in FIG. 7 toward the cocked  
15 position in FIG. 8 and beyond the cocked position to the past-cocked position in FIG. 9.  
16 With trigger 27 pulled and held in its pulled or fired position locating disconnector hook  
17 33 in the engaged position as in FIG. 8, hammer disconnect notch 47 of the rearwardly  
18 pivoting hammer 40 clips past disconnector hook 33 with a sharp, glancing blow as  
19 hammer 40 moves toward and beyond the cocked position in FIG. 8 to the past-cocked  
20 position in FIG. 9. In the past-cocked position of hammer 40 and the discharged  
21 orientation of trigger disconnector assembly 39 in FIG. 9 with trigger 27 pulled and held  
22 in its pulled/fired position, disconnector hook 33 engages hammer disconnect notch 47 in  
23 the engaged position of disconnector hook 33 preventing forward movement of hammer

1 40. Forward movement of hammer 40 is thus arrested by disconnector hook 33 engaging  
2 hammer disconnect notch 47. This prevents automatic fire. When trigger 27 is released,  
3 trigger body 23 and trigger 27 pivot a trigger reset or resetting travel distance in the semi-  
4 automatic mode of operation from the pulled/fired position of trigger body 23 and trigger  
5 27 to the set position of trigger body 23 and trigger 27, whereby trigger disconnector  
6 assembly 39 pivots from the discharged orientation to the charged orientation in FIG. 4,  
7 in which trigger 27 is moved forwardly, trigger nose 24 at head 24A is raised to its set  
8 position received in trigger notch 49, holding hammer 40 in the cocked position, and tail  
9 25A is lowered away from selector 70. At the same time, disconnector hook 33 is  
10 pivoted rearwardly from the engaged position to the disengaged position removing it  
11 from engagement with hammer disconnect notch 47. Forward movement of hammer 40  
12 is arrested by trigger nose 24 engaging trigger notch 49. Hammer 40 is thus retained in  
13 the cocked position by trigger nose 24, preparatory to firing by another trigger pull.

14 After disconnector hook 33 clips past hammer disconnect notch 47 in response to  
15 hammer 40 moving into the past-cocked position beyond the cocked position, hammer 40  
16 over-travels in the past-cocked position, as indicated by the phantom outline of hammer  
17 40 in FIG. 9, misses reset lever 50, including arm 53, in the inoperative position of reset  
18 lever 50, and strikes disconnector 30 which in turn imparts the energy from the striking  
19 hammer 40 to a rear portion of trigger disconnector assembly 39 of trigger assembly 21,  
20 causing trigger disconnector assembly 39 to reset, namely, to pivot from the discharged  
21 position to the charged position. Once in the charged position, disconnector hook 33 is in  
22 its disengaged position free from interfering with hammer disconnect notch 47 and  
23 trigger nose 24 is in its set position in preparation to be received by the trigger notch 49

1 in the cocked position of hammer 40. As hammer 40 then pivots forwardly from the  
2 past-cocked position toward the cocked position, hammer disconnect notch 47 passes by  
3 disconnector hook 33 and trigger nose 24 is received trigger notch 49, holding hammer  
4 40 in the cocked position preparatory to firing by another trigger 27 pull. In the  
5 inoperative position of reset lever 50 in the semi-automatic mode of operation of trigger  
6 mechanism 20, selector 70 holds reset lever 50 out-of-play away from hammer 40  
7 preventing hammer 40 from contacting/striking or otherwise interacting with reset lever  
8 50 during semi-automatic firing.

9 FIG. 17 is a side elevation view of trigger body 23, selector 70, and hammer 40  
10 oriented as in FIG. 4 illustrating selector 70 in the semi-automatic mode of operation, and  
11 illustrating trigger body 23 in the set position holding hammer 40 in the cocked position.  
12 Disconnector 30 is not shown in FIG. 17, but is referenced in the figures described above.  
13 Selector 70 has a stop body 78. Stop body 78 is located near, above, and opposite to,  
14 notch 25 of tail 25A of trigger body 23. Stop body 78 includes two stops, including stop  
15 78A and stop 78B. Stops 78A and 78B are surfaces of stop body 78. Here, stops 78A  
16 and 78B are perpendicular relative to each other.

17 In a first position of selector 70 corresponding to the semi-automatic mode of  
18 operation of selector 70 as in FIG. 17, stop 78A is registered with, meaning aligned with,  
19 tail 25A, specifically notch 25 of tail 25A. With trigger nose 24 received in trigger notch  
20 49 holding hammer 40 in the cocked position in preparation for firing, a distance D1 is  
21 defined between semi-automatic stop 78A and tail 25A, specifically notch 25 of tail 25A.  
22 Again, in the semi-automatic mode of operation of trigger mechanism 20 in preparation  
23 for firing trigger body 23 and trigger nose 24 are each in a set position, and in this set

1 position of trigger body 23 trigger nose 24 at head 24A is received in trigger notch 49 in  
2 preparation for pulling trigger 27 to release hammer 40. Upon pulling trigger 27 so as to  
3 move trigger body 23 and trigger 27 the trigger pulling travel distance in the semi-  
4 automatic mode of operation from the set position holding hammer 40 to the pulled/fired  
5 position releasing hammer 40, trigger nose 24 is lowered out of trigger notch 49 from the  
6 set position to a released position, releasing hammer 40, while at the same time raising  
7 tail 25A of trigger body 23 toward stop 78A of stop body 78 of selector 70 closing  
8 distance D1 between notch 25 of tail 25A of trigger body 23 so as to bring notch 25 of  
9 tail 25A of trigger body 23 into direct contact against stop 78A of stop body 78. Upward  
10 movement of tail 25A of trigger body 23 is thus arrested by notch 25 of tail 25A  
11 contacting stop 78A of stop body 78 which, in turn, arrests movement of trigger body 23,  
12 or in other words limits or otherwise arrests the pivotal movement of trigger 27 and  
13 trigger body 23 past the pulled/fired position in the semi-automatic mode of operation.  
14 Trigger body 23 and trigger 27 in turn move the trigger reset travel distance in the semi-  
15 automatic mode of operation from the pulled position to the set position to hold hammer  
16 40 in the cocked position preparatory to firing another round as described above. In the  
17 semi-automatic mode of operation of trigger mechanism 20, the trigger pulling and  
18 trigger reset travel distances of trigger body 23 and trigger 27 are equal.

19 Assisted-reset semi-automatic firing is achieved by utilizing selector 70, which is  
20 rotated in the direction of arrowed line E in FIG. 4 from the semi-automatic mode or  
21 semi-automatic setting to the assisted-reset semi-automatic mode or assisted-reset semi-  
22 automatic setting in FIG. 5 to adjust trigger mechanism 20 from the semi-automatic mode  
23 of operation as in FIG. 4 to the assisted-reset semi-automatic mode of operation as in

1 FIG. 5. At the same time, cam 75 of selector 70 contacts/abuts/engages arm 52, as seen  
2 in FIG. 16, so as to act on arm 52 of reset lever 50 pivoting reset lever 50 from its  
3 inoperative position defining the inoperative position of arm 53 to its operative position  
4 defining the operative position of arm 53, resulting in the movement of arm 53 from the  
5 aft or rearward upright position toward selector 70 and away from cam surface 35 of  
6 disconnector 30 to the fore of forward upright position away from selector 70 and toward  
7 and in contact against cam surface 35 of disconnector lever 32 of disconnector 30 of  
8 trigger disconnector assembly 39. The constant tension on reset lever 50 provided by  
9 reset lever spring 60 constantly biasing/urging/tensioning reset lever 50 from its  
10 inoperative position relative to trigger disconnector assembly 39 to its operative position  
11 relative to trigger disconnector assembly 39 pivots reset lever from its inoperative  
12 position to its operative position in response to cam 75 acting on arm 52 in response to  
13 rotation of selector 70 from its semi-automatic mode or semi-automatic setting to its  
14 assisted-reset semi-automatic mode or assisted-reset semi-automatic setting.

15 The contact between cam surface 35 and arm 53 of reset lever 50 is a mechanical  
16 coupling. This mechanical coupling defines a mechanical communication between arm  
17 53 of reset lever 50 and trigger disconnector assembly 39 and, more specifically, between  
18 arm 53 of reset lever 50 and disconnector 30 and, still more specifically, between arm 53  
19 of reset lever 50 and disconnector lever 32 of disconnector 30 and, yet still more  
20 specifically, between arm 53 of reset lever 50 and cam surface 35 of disconnector lever  
21 32 of disconnector 30 of trigger disconnector assembly 39, all according to various  
22 aspects of the invention. As a result of the contact between cam surface 35 and arm 53,  
23 trigger disconnector assembly 39 is in mechanical communication with reset lever 50,

1 disconnector 30 is in mechanical communication with reset lever 50, disconnector lever  
2 32 is in mechanical communication with reset lever 50, and cam surface 35 is in  
3 mechanical communication with reset lever 50. As arm 53 is the thing that engages cam  
4 surface 35 in the operative position of reset lever, arm 53 of reset lever 50 is an abutment  
5 of reset lever 50 that contacts cam surface 35 in the operative position of reset lever 50.

6 In the inoperative position of reset lever 50 in the semi-automatic mode of  
7 operation of trigger mechanism 20, reset lever 50 is out of play, whereby hammer 40  
8 does not contact or otherwise strike or interact with reset lever 50 during semi-automatic  
9 firing. In the operative position of reset lever 50, reset lever 50 is in play being  
10 operatively coupled to hammer tail 46 of striking end 45 of hammer 40, wherein reset  
11 lever 50 is positioned to be contacted or struck by hammer tail 40 of striking end 45 of  
12 hammer 40 in the past-cocked position of hammer 40 during assisted-reset semi-  
13 automatic firing.

14 In FIG. 5, selector 70 is in the assisted-reset semi-automatic mode or assisted-  
15 reset semi-automatic setting and trigger nose 24 of head 24A is received in trigger notch  
16 49, holding hammer 40 in the cocked position in preparation for firing. In the assisted-  
17 reset semi-automatic mode of operation of trigger mechanism 20, trigger disconnector  
18 assembly 39 is a charged or pre-pulled orientation. In this charged or pre-pulled  
19 orientation, trigger body 23 and trigger nose 24 at head 24A are each in a set position. In  
20 this set position of trigger body 23, trigger nose 24 at head 24A received in trigger notch  
21 49 and disconnector hook 33 is in the disengaged position being disengaged relative to  
22 hammer disconnect notch 47, allowing forward movement of hammer 40 upon pulling  
23 trigger 27. Upon pulling trigger 27 so as to move trigger body 23 a trigger pulling or pull

1 travel distance in the assisted-reset mode of operation from its set position holding  
2 hammer 40 to its pulled/fired position in the assisted-reset semi-automatic mode of  
3 operation releasing hammer 40, trigger disconnector assembly 39 is pivoted from the  
4 charged orientation to the discharged orientation, lowering trigger nose 24 out of trigger  
5 notch 49 from the set position to a released position, releasing hammer 40 and moving  
6 disconnector hook 33 forwardly from the disengaged position to an engaged position, as  
7 shown in FIG. 10, causing hammer 40 pivot forwardly in the direction of arrowed line F  
8 to a firing position shown in FIG. 11 to fire a round, while at the same time raising tail  
9 25A of trigger body 23 toward selector 70.

10 After a round has been fired, the rearwardly moving bolt carrier engages hammer  
11 40 and pivots it rearwardly in the direction of arrowed line G in FIG. 11 toward the  
12 cocked position in FIG. 12 and beyond the cocked position to the past-cocked position in  
13 FIG. 13. With trigger 27 pulled and held in its pulled/fired position locating disconnector  
14 hook 33 in the engaged position as in FIG. 12, hammer disconnect notch 47 of the  
15 rearwardly pivoting hammer 40 clips past disconnector hook 33 with a sharp, glancing  
16 blow as hammer moves toward and beyond the cocked position in FIG. 12 to the past-  
17 cocked position in FIG. 13. In the past-cocked position of hammer 40 and the discharge  
18 orientation of trigger disconnector assembly 39 in FIG. 13 with trigger 27 pulled and held  
19 in its pulled/fired position, disconnector hook 33 is positioned to engage hammer  
20 disconnect notch 47 in the engaged position of disconnector hook 33 for preventing  
21 forward movement of hammer 40. Forward movement of hammer 40 is thus arrested by  
22 disconnector hook 33 engaging hammer disconnect notch 47. This prevents automatic  
23 fire. When trigger 27 is released, trigger body 23 and trigger 27 pivot a trigger resetting

1 or reset travel distance in the assisted-reset semi-automatic mode of operation from the  
2 pulled position of trigger body 23 and trigger 27 to the set position of trigger body 23 and  
3 trigger 27, whereby trigger disconnector assembly 39 pivots from the discharged  
4 orientation to the charged orientation in FIG. 5, in which trigger 27 is moved forwardly,  
5 trigger nose 24 at head 24A is moved to its set position received in trigger notch 49,  
6 holding hammer 40 in the cocked position, and tail 25A is lowered away from selector  
7 70. At the same time, disconnector hook 33 is pivoted rearwardly from the engaged  
8 position to the disengaged position removing it from engagement with hammer  
9 disconnect notch 47. Forward movement of hammer 40 is arrested by trigger nose 24  
10 engaging trigger notch 49. Hammer 40 is thus retained in the cocked position by trigger  
11 nose 24, preparatory to firing by another trigger pull.

12       Reset lever 50 pivots at pivot 56 between inoperative and operative positions  
13 relative to cam surface 35 of disconnector lever 32 of disconnector 30 of trigger  
14 disconnector assembly 39. The constant tension applied by reset lever spring 60 (FIGS. 2  
15 and 3) keeps constant tension on reset lever 50 constantly urging/biasing reset lever 50  
16 into its operative position in the assisted-reset semi-automatic mode or setting of selector  
17 70, in accordance with the principle of the invention. In response to movement of reset  
18 lever 50 from its inoperative position to its operative position in response to movement of  
19 selector 70 to the assist-reset semi-automatic setting from either of the safe setting or the  
20 semi-automatic setting of selector 70, arm 53 moves from the inoperative position thereof  
21 as in FIG. 4 to the operative position thereof as in FIG. 5 in direct contact against cam  
22 surface 35 of disconnector lever 32 of disconnector 30 of trigger disconnector assembly  
23 39. This contact of arm 53 of reset lever 50 directly against cam surface 35 is a

1 mechanical coupling that forms the mechanical communication as discussed and defined  
2 above.

3 In the inoperative position of arm 53, arm 53 is pivoted rearwardly with respect to  
4 cam surface 35 and trigger disconnector assembly 39 in the direction of selector 70, and  
5 is spaced-apart from, and not in contact with, cam surface 35 of disconnector lever 32 of  
6 disconnector 30. In the operative position of arm 53, arm 53 is pivoted in the opposite  
7 direction forwardly with respect to cam surface 35 of disconnector lever 32 of  
8 disconnector 30 of trigger disconnector assembly 39 in the direction of pivot 28 and into  
9 direct contact against cam surface 35 of disconnector lever 32 of disconnector 30 of  
10 trigger disconnector assembly 39. And so in the inoperative position of reset lever 50,  
11 arm 53 is also in an inoperative position and is made to extend upright and rearward  
12 toward selector 70 and away from hammer tail 46 of hammer 40 in the cocked position of  
13 hammer 40, and in this position cannot be contacted or struck by hammer tail 46 of  
14 striking end 45 of hammer 40 during semi-automatic firing. As such, hammer 40 misses  
15 reset lever 50, including arm 53, as hammer 40 travels downwardly in the past-cocked  
16 position. In the operative position of reset lever 50, arm 53 is also in an operative  
17 position and is made to extend upright and forward from selector 70 toward hammer tail  
18 46 of hammer 40 in the cocked position of hammer 40, and in this position is operatively  
19 coupled to hammer tail 46 of hammer 40, wherein arm 53 of reset lever 50 is positioned  
20 to be contacted or struck by hammer tail 46 of striking end 45 of hammer 40 in the past-  
21 cocked position of hammer 40 during assisted-reset semi-automatic firing. Again,  
22 because the constant tension applied by reset lever spring 60 (FIGS. 2 and 3) keeps  
23 constant tension on reset lever 50 constantly urging/biasing reset lever 50 toward its

1 operative position in the assisted-reset semi-automatic mode or setting of selector 70, the  
2 constant tension applied by reset lever spring 60 tends to hold reset lever 50 in its  
3 operative position in the assisted-reset semi-automatic mode of operation.

4 In the operative position of reset lever 50 as explained above, arm 53 is in contact  
5 with cam surface 35 of disconnector lever 32 of disconnector 30 of trigger disconnector  
6 assembly 39, and this contact persists or is otherwise maintained by reset lever spring 60  
7 constantly acting on reset lever 50 during the pivoting movement of trigger disconnector  
8 assembly 39 between its charged and discharged positions. Cam surface 35 acts against  
9 arm 53 in response to movement of trigger disconnector assembly 39 between its charged  
10 and discharged positions. This contact interaction between cam surface 35 and arm 53 in  
11 the operative position of reset lever 50 moves reset lever 50 in the direction of double  
12 arrowed line H in FIG. 5 toward the inoperative position of reset lever 50 to an open  
13 position of reset lever 50 in the discharged position of trigger disconnector assembly 39  
14 as in FIG. 10, and in the opposite direction away from the inoperative position of reset  
15 lever 50 to a closed position of reset lever in the charged position of trigger disconnector  
16 assembly 50 as in FIG. 5. And so in the operative position of reset lever 50, reset lever  
17 50 moves between its open and closed positions relative to trigger disconnector assembly  
18 39 and, more particular, relative to cam surface 35 of disconnector lever 32 of  
19 disconnector 30 of trigger disconnector assembly 39, in response to movement of trigger  
20 disconnector assembly 39 between the discharged and charged positions. In the operative  
21 position of reset lever 50, reset lever spring 60 keeps constant tension on reset lever 50  
22 constantly urging/biasing reset lever 50 from its open position toward its closed position  
23 in the assisted-reset semi-automatic mode or setting of selector 70, and the constant

1 tension applied by reset lever spring 60 thus tends to hold reset lever 50 in its closed  
2 position in the assisted-reset semi-automatic mode of operation. At the same time, reset  
3 lever 50 remains in its operative position in both its open and closed positions in the  
4 discharged and charged positions of trigger disconnector assembly 39 in the assisted-reset  
5 semi-automatic mode of operation of trigger assembly 20, in accordance with the  
6 principle of the invention.

7 The open position of reset lever 50 in the operative position of reset lever 50 is an  
8 open position of arm 53, and the closed position of reset lever 50 in the operative position  
9 of reset lever 50 is a closed position of arm 53. In response to movement of reset lever  
10 50 between its open and closed positions in response to movement of trigger disconnector  
11 assembly 39 between its discharged and charged positions, arm 53, in turn, moves  
12 between open and closed positions relative to trigger disconnector assembly 39 and, more  
13 particular, relative to cam surface 35 of disconnector lever 32 of disconnector 30 of  
14 trigger disconnector assembly 39. In the open position of arm 53, arm 53 is pivoted  
15 rearwardly and upwardly with respect to cam surface 35 of disconnector lever 32 of  
16 disconnector 30 of trigger disconnector assembly 39 in the direction of selector 70. In the  
17 closed position of arm 53, arm 53 is pivoted forwardly and downwardly from the open  
18 position thereof with respect to cam surface 35 of disconnector lever 32 of disconnector  
19 30 of trigger disconnector assembly 39 in the direction of pivot 28. Because reset lever  
20 spring 60 keeps constant tension on reset lever 50 constantly urging/biasing reset lever 50  
21 from its open position toward its closed position in the assisted-reset semi-automatic  
22 mode or setting of selector 70, the constant tension applied by reset lever spring 60 thus  
23 tends to hold arm 53 in its closed position in the assisted-reset semi-automatic mode of

1 operation. At the same time, arm 53 remains in its operative position in both its open and  
2 closed positions in the discharged and charged positions of trigger disconnector assembly  
3 39 in the assisted-reset semi-automatic mode of operation of trigger assembly 20.

4 In the operation of reset lever 50 in the assisted-reset semi-automatic mode of  
5 operation of trigger mechanism 20, after a round has been fired rearwardly moving bolt  
6 carrier engages hammer 40 and pivots it rearwardly in the direction of arrowed line G in  
7 FIG. 11 toward the cocked position in FIG. 12 and beyond the cocked position to the  
8 past-cocked position in FIG. 13. With trigger 27 pulled and held in its pulled/fired  
9 position as in FIG. 13, as hammer 40 moves beyond the cocked position to the past-  
10 cocked position in FIG. 13, hammer disconnect notch 47 of the rearwardly pivoting  
11 hammer 40 clips past disconnector hook 33 with a sharp, glancing blow as hammer 40  
12 moves toward and beyond the cocked position in FIG. 12 to the past-cocked position in  
13 FIG. 13, hammer tail 46 of striking end 45 of hammer 40 encounters/strikes arm 53 of  
14 reset lever 50 as shown in FIG. 13, in this example at a location above cam surface 35  
15 and, moreover, between cam surface 35 of disconnector lever 32 and disconnector hook  
16 33, which in turn imparts the energy from the striking hammer 40 to arm 53 of reset lever  
17 50. This, in turn, pivots reset lever 50 from the open position to the closed position at the  
18 same time moving arm 53 from the open position in FIG. 13 to the closed position in  
19 FIG. 14 as hammer 40 over-travels downwardly in the direction of arrowed line I in FIG.  
20 13 in the past-cocked position. At the same time, arm 53 of reset lever 50 engages cam  
21 surface 35 of disconnector lever 32 of disconnector 30 of trigger disconnector assembly  
22 39 which in turn imparts the energy from the pivoting reset lever 50 to disconnector 30 of  
23 disconnector assembly 39, whereby arm 53 acts on cam surface 35 pivoting trigger

1 disconnector assembly 39, including trigger body 23 at pivot 28 and disconnector 30 at  
2 pivot point 38 concurrent with pivot 28, from the discharged orientation to the charged  
3 orientation when arm 53 moves via the pivoting of reset lever 50 from the open position  
4 to the closed position, raising trigger nose 24 of head 24A to its set position in  
5 preparation to be received by trigger notch 49 in the cocked position of hammer 40 and to  
6 position disconnector 30 in the disengaged position of disconnector hook 33 relative to  
7 hammer disconnect notch 49, as shown in FIG. 14, while at the same time lowering tail  
8 25A of trigger body 23 away from selector 70. At the same time, disconnector hook 33 is  
9 pivoted rearwardly from the engaged position to the disengaged position removing it  
10 from engagement with hammer disconnect notch 47. Forward movement of hammer 40  
11 is arrested by trigger nose 24 engaging trigger notch 49. Hammer 40 is thus retained in  
12 the cocked position by trigger nose 24, preparatory to firing by another trigger pull. And  
13 so in the assisted-reset semi-automatic mode of operation of trigger mechanism 20 trigger  
14 disconnector assembly 39 is in mechanical communication with reset lever 50, whereby  
15 movement of reset lever 50 from its open position to its closed position via the action of  
16 hammer 40 urges/imparts corresponding movement of disconnector assembly 39 from the  
17 discharged orientation to the charged orientation.

18 According then to the principle of the invention, in the assisted-reset semi-  
19 automatic mode of operation of trigger mechanism 20 trigger disconnector assembly 39 is  
20 in mechanical communication with reset lever 50. Striking end 45 of hammer 40 strikes  
21 reset lever 50 in the past-cocked position of hammer 40 pivoting reset lever 50 from the  
22 open position to the closed position, and reset lever 50 in turn acts on trigger disconnector  
23 assembly 39 to pivot trigger disconnector assembly 39 from the discharged orientation to

1 the charged orientation when reset lever 50 moves from the open position to the closed  
2 position, to position trigger nose 24 in the set position in preparation to be received by  
3 trigger notch 49 in the cocked position of hammer 40 and to position disconnector 30 in  
4 the disengaged position of disconnector hook 33 relative to hammer disconnect notch 47,  
5 and to lower tail 25A of trigger body 23 away from selector 70.

6 In another aspect according to the principle of the invention, in the assisted-reset  
7 semi-automatic mode of operation of trigger mechanism 20 cam surface 35 of trigger  
8 disconnector 39 assembly is in mechanical communication with reset lever 50. Hammer  
9 tail 46 of striking end 45 of hammer 40 strikes reset lever 50 in the past-cocked position  
10 hammer 40 pivoting reset lever 50 from the open position to the closed position, and reset  
11 lever 50 in turn acts on cam surface 35 to pivot trigger disconnector assembly 39 from the  
12 discharged orientation to the charged orientation when reset lever 50 moves from the  
13 open position to the closed position, to position trigger nose 24 in the set position in  
14 preparation to be received by trigger notch 49 in the cocked position of hammer 40 and to  
15 position disconnector 30 in the disengaged position of disconnector hook 33 relative to  
16 hammer disconnect notch 47, and to lower tail 25A of trigger body 23 away from selector  
17 70.

18 In yet another aspect according to the principle of the invention, in the assisted-  
19 reset semi-automatic mode of operation of trigger mechanism 20 disconnector 30 is in  
20 mechanical communication with reset lever 50. Striking end 45 of hammer 40 strikes  
21 reset lever 50 in the past-cocked position of hammer 40 pivoting reset lever 50 from the  
22 open position to the closed position, and reset lever 50 in turn acts on disconnector 30 to  
23 concurrently pivot disconnector 30 from the engaged position of disconnector hook 33 to

1 the disengaged position of disconnector hook 33 and trigger body 23 from the released  
2 position of trigger nose 24 to the set position of trigger nose 24 in preparation to be  
3 received by trigger notch 49 in the cocked position of hammer 40 while at the same time  
4 lowering tail 25A of trigger body 23 away from selector 70.

5 In yet still another aspect according to the principle of the invention, in the  
6 assisted-reset semi-automatic mode of operation of trigger mechanism 20 disconnector  
7 lever 32 of disconnector 30 is in mechanical communication with reset lever 50. Striking  
8 end 45 of hammer 40 strikes reset lever 50 in the past-cocked position of hammer 40  
9 pivoting reset lever 50 from the open position to the closed position, and reset lever 50 in  
10 turn acts on disconnector lever 32 to concurrently pivot disconnector 30 from the  
11 engaged position of disconnector hook 33 to the disengaged position of disconnector  
12 hook 33 and trigger body 23 from the released position of trigger nose 24 to the set  
13 position of trigger nose 24 in preparation to be received by trigger notch 49 in the cocked  
14 position of hammer 40 while at the same time lowering tail 25A of trigger body 23 away  
15 from selector 70.

16 In still a further aspect according to the principle of the invention, in the assisted-  
17 reset semi-automatic mode of operation of trigger mechanism 20 cam surface 35 of  
18 disconnector 30 is in mechanical communication with reset lever 50. Striking end 45 of  
19 hammer 40 strikes reset lever 50 in the past-cocked position of hammer 40 pivoting reset  
20 lever 50 from the open position to the closed position, and reset lever 50 in turn acts on  
21 cam surface 35 to concurrently pivot disconnector 30 from the engaged position of  
22 disconnector hook 33 to the disengaged position of disconnector hook 33 and trigger  
23 body 23 from the released position of trigger nose 24 to the set position of trigger nose 24

1 in preparation to be received by trigger notch 49 in the cocked position of hammer 40  
2 while at the same time lowering tail 25A of trigger body 23 away from selector 70.

3 In sum, arm 53 of reset lever 50 intercepts hammer 40 in the past-cocked position  
4 of hammer 40 just after hammer disconnect notch 47 of the rearwardly pivoting hammer  
5 40 clips past disconnector hook 33 with a sharp, glancing blow as hammer 40 moves  
6 toward and beyond the cocked position in FIG. 12 to the past-cocked position in FIG. 13.

7 The contact interaction between hammer 40 and reset lever 50 isolates hammer 40 from  
8 trigger disconnector assembly 39. This prevents hammer 40 from striking trigger  
9 disconnector assembly 39 in the past cocked position of hammer 40, including trigger  
10 body 23, disconnector 30, disconnector lever 32, and cam surface 35. The interaction of  
11 reset lever 50 between hammer 40 and trigger disconnector assembly 39 in the various  
12 aspects discussed above, assists in resetting trigger disconnector assembly 39 from its  
13 discharged position to its charged position in the past-cocked position of hammer 40.

14 The interaction of reset lever 50 between hammer 40 and trigger disconnector assembly  
15 39 according to the various aspects discussed herein is maintained in the over-travel of  
16 hammer 40 in the past cocked position, and this accelerates the resetting of trigger  
17 disconnector assembly 39 from the discharged position to the charged position because  
18 arm 53 of reset lever 50 is acting on cam surface 35 to pivot trigger disconnector  
19 assembly 39 from the discharged position to the charged position throughout the past-  
20 cocked over-travel of hammer 40. Downward movement of hammer 40 in the past-  
21 cocked position is eventually arrested by hammer tail 46 engaging arm 53 in the closed  
22 position of arm 53 in the closed position of reset lever 50, according to the principle of  
23 the invention, at which point hammer 40 snaps forwardly. Once trigger disconnector

1 assembly 39 is in the charged position, disconnector hook 33 is in its disengaged position  
2 free from interfering with hammer disconnect notch 47 and trigger nose 24 is in its set  
3 position in preparation to be received by the trigger notch 49 in the cocked position of  
4 hammer 40. As hammer 40 then pivots forwardly from the past-cocked position toward  
5 the cocked position, hammer disconnect notch 47 passes by disconnector hook 33 and  
6 trigger nose 24 is received trigger notch 49 as in FIG. 5, holding hammer 40 in the  
7 cocked position resetting trigger 27 of trigger body 23 to hammer 40 preparatory to firing  
8 by another trigger 27 pull. This is the trigger-to-hammer assisted reset feature of the  
9 assisted-reset semi-automatic mode of operation of trigger mechanism 20. The  
10 accelerated resetting of trigger disconnector assembly 39 from the discharged position to  
11 the charged position resulting from the interaction of reset lever 50 between trigger  
12 disconnector assembly 39 and hammer 40 in the past-cocked position quickens the rate of  
13 semi-automatic fire in the assisted-reset semi-automatic mode of operation of trigger  
14 mechanism 20 and allows for faster trigger pulls between each fired round, which is  
15 particularly advantageous, particularly when a faster rate of semi-automatic fire is  
16 required, such as in combat situations and competitive shooting events.

17 FIG. 19 is a side elevation view of trigger body 23, selector 70, and hammer 40  
18 oriented as in FIG. 5 illustrating selector 70 in the assisted-reset semi-automatic mode of  
19 operation, and illustrating trigger body 23 in the set position holding hammer 40 in the  
20 cocked position. Disconnector 30 is not shown in FIG. 17, but is shown and referenced  
21 in FIGS. 1-13. Selector 70 has stop body 78. As previously described, stop body 78 is  
22 located near, above, and opposite to, notch 25 of tail 25A of trigger body 23, stop body

1 78 includes two stops, including stop 78A and stop 78B, stops 78A and 78B are surfaces  
2 of stop body 78, and here stops 78A and 78B are perpendicular relative to each other.

3       In the first position of selector 70 corresponding to the semi-automatic mode of  
4 operation of selector 70 as in FIG. 17, stop 78A is registered with, meaning aligned with,  
5 notch 25 of tail 25A. In a second position of selector 70 corresponding to the assisted-  
6 reset semi-automatic mode of operation of selector 70 as in FIG. 17, stop 78B is  
7 registered with, meaning aligned with, tail 25A, specifically notch 25 of tail 25A. With  
8 trigger nose 24 received in trigger notch 49 holding hammer 40 in the cocked position in  
9 preparation for firing, a distance D2 is defined between semi-automatic stop 78B and tail  
10 25A, specifically notch 25 of tail 25A. Again, in the assisted-reset semi-automatic mode  
11 of operation of trigger mechanism 20 in preparation for firing trigger body 23 and trigger  
12 nose 24 are each in a set position, and in this set position of trigger body 23 trigger nose  
13 24 at head 24A is received in trigger notch 49 in preparation for pulling trigger 27 to  
14 release hammer 40. Upon pulling trigger 27 so as to move trigger body 23 and trigger 27  
15 the trigger pulling travel distance in the assisted-reset semi-automatic mode of operation  
16 from the set position holding hammer 40 to the pulled/fired position releasing hammer  
17 40, trigger nose 24 is lowered out of trigger notch 49 from the set position to a released  
18 position, releasing hammer 40, while at the same time raising tail 25A of trigger body 23  
19 toward stop 78B of stop body 78 of selector 70 closing distance D2 between notch 25 of  
20 tail 25A of trigger body 23 so as to bring notch 25 of tail 25A of trigger body 23 into  
21 direct contact against stop 78B of stop body 78. Upward movement of tail 25A of trigger  
22 body 23 is thus arrested by notch 25 of tail 25A contacting stop 78B of stop body 78  
23 which, in turn, and arrests movement of trigger body 23, or in other words limits or

1 otherwise arrests the pivotal movement of trigger 27 and trigger body 23 past the  
2 pulled/fired position in the assisted-reset semi-automatic mode of operation. Trigger  
3 body 23 and trigger 27 in turn move the trigger reset travel distance in the assisted-reset  
4 semi-automatic mode of operation from the pulled position to the set position. In the  
5 assisted-reset semi-automatic mode of operation of trigger mechanism 20, the trigger  
6 pulling and trigger reset travel distances of trigger body 23 and trigger 27 are equal.

7 Distance D1 denoted in FIGS. 15 and 17 is greater than distance D2 denoted in  
8 FIGS. 16 and 19. Because distance D2 is less than distance D1, the trigger pull travel  
9 distance of trigger body 23 and trigger 27 from the set position thereof to the pulled/fired  
10 position thereof in the second position of selector 70 corresponding to the assisted reset  
11 semi-automatic mode of operation of trigger mechanism 20 is less than the trigger pull  
12 travel distance of trigger body 23 and trigger 27 from the set position thereof to the  
13 pulled/fired position in the first position of selector 70 corresponding to the semi-  
14 automatic mode of operation of trigger mechanism 20, and the trigger reset travel  
15 distance of trigger body 23 and trigger 27 from the pulled/fired position thereof to the set  
16 position thereof in the second position of selector 70 corresponding to the assisted reset  
17 semi-automatic mode of operation of trigger mechanism 20 is less than the trigger rest  
18 travel distance of trigger body 23 and trigger 27 from the pulled/fired position thereof to  
19 the set position in first position of selector 70 corresponding to the semi-automatic mode  
20 of operation of trigger mechanism 20. The lessened trigger pull and trigger reset travel  
21 distances of trigger body 23 and trigger 27 in second position of selector 70  
22 corresponding to the assisted-reset mode of operation of trigger mechanism 20 compared  
23 to the first position of selector 70 corresponding to the semi-automatic mode of operation

1 allows for a more rapid repeated pulling and resetting of trigger body 23 and trigger 27  
2 and thus a more rapid rate of repeated semi-automatic fire in the second position of  
3 selector 70 than in the first position of selector 70. Also, the lessened trigger reset travel  
4 distance in the second position of selector 70 corresponding to the assisted-reset semi-  
5 automatic mode of operation of trigger mechanism 20 compared to the first position of  
6 selector 70 corresponding to the semi-automatic mode of operation produces less trigger  
7 snap of the trigger 27 from the pulled/fired position to the reset position and thus less  
8 discomfort on the shooter's trigger finger from prolonged firing activities.

9 According then to the principle of the invention with reference to FIGS. 17-19,  
10 trigger mechanism 20 includes trigger assembly 21 with hammer 40 having trigger notch  
11 49, trigger body 23 with trigger nose 24, trigger tail 25A, and trigger 27, trigger nose 24  
12 for receiving trigger notch 49 in the cocked position of hammer 40 and the set position of  
13 trigger body 23 and for releasing trigger nose 24 when trigger body 23 is moved a travel  
14 distance from the set position to a fired position, disconnector 30 (shown in FIGS. 1-14),  
15 coupled between hammer 40 and trigger body 23, and selector 70 movable between a  
16 first position as in FIGS. 17 and 18, which corresponds to the semi-automatic mode of  
17 fire or operation, and a second position as in FIGS. 19 and 20, which corresponds to the  
18 assisted-reset semi-automatic mode of fire or operation, for adjusting the travel distance  
19 of trigger body 23 from the set position to the fired position and from the fired position  
20 back to the set position. Selector 70 has stop 78A aligned with notch 25 of tail 25A of  
21 trigger body 23 in the first position of selector 70 as in FIGS. 17 and 18, and stop 78B  
22 aligned with notch 25 of tail 25A of trigger body 23 in the second position of selector 70  
23 as in FIGS. 19 and 20. Stop 78A is separated from tail 25A, specifically notch 25 of tail

1 25A, of trigger body 23 distance D1 in the set position of trigger body 23 in the first  
2 position of the selector 70 as in FIGS. 17 and 18. Stop 78B is separated from tail 25A,  
3 specifically notch 25 of tail 25A, of trigger body 23 distance D2 in the set position of  
4 trigger body 23 in the second position of selector 70 as in FIGS. 19 and 20. In the first  
5 position of selector 70 and the fired position of trigger body 23 as in FIG. 18, distance D1  
6 of FIG. 17 between stop 78A and tail 25A, specifically notch 25 of tail 25A, of trigger  
7 body 23 is closed and tail 25A, specifically notch 25 of tail 25A, contacts stop 78A, and  
8 movement of trigger body 23 in a direction from the set position to the fired position is  
9 arrested by tail 25A, specifically notch 25 of tail 25A, contacting stop 78A. In the second  
10 position of selector 70 and the fired position of trigger body 23 as in FIG. 20, distance D2  
11 between stop 78B and tail 25A, specifically notch 25 of tail 25A, of trigger body 23 is  
12 closed and tail 25A, specifically notch 25 of tail 25A, contacts stop 78B, and movement  
13 of trigger body 23 is arrested by tail 25A, specifically notch 25 of tail 25A, contacting  
14 stop 78B. Distance D2 is less than distance D1, wherein the travel distance of trigger  
15 body 23 in the second position of selector 70 as in FIGS. 19 and 20 is less than the travel  
16 distance of trigger body 23 in the first position of selector 70 as in FIGS. 17 and 18.

17 The present invention is described above with reference to preferred  
18 embodiments. However, those skilled in the art will recognize that changes and  
19 modifications may be made in the described embodiments without departing from the  
20 nature and scope of the present invention. Various further changes and modifications to  
21 the embodiments herein chosen for purposes of illustration will readily occur to those  
22 skilled in the art. To the extent that such modifications and variations do not depart from  
23 the spirit of the invention, they are intended to be included within the scope thereof.

1           Having fully described the invention in such clear and concise terms as to enable  
2    those skilled in the art to understand and practice the same, the invention claimed is:

CLAIMS

1. A trigger mechanism, comprising:
  - a trigger disconnector assembly having a trigger nose, and a disconnector having a disconnector hook;
  - a reset lever mounted for pivotal movement between open and closed positions;
  - the trigger disconnector assembly mounted for pivotal movement between charged and discharged orientations, the charged orientation comprises a set position of the trigger nose and a disengaged position of the disconnector hook, and the discharged orientation comprises a released position of the trigger nose and an engaged position of the disconnector hook;
  - a hammer includes a striking end, a hammer disconnect notch, a pivot end pivotable about a hammer pivot between a firing position of the striking end, a cocked position of the striking end, and a past-cocked position of the striking end, and a trigger notch formed in the pivot end for receiving the trigger nose in the cocked position of the hammer; and
  - the trigger disconnector assembly is in mechanical communication with the reset lever, the striking end of the hammer strikes the reset lever in the past-cocked position of the hammer pivoting the reset lever from the open position to the closed position, the reset lever acting on the trigger disconnector assembly to pivot the trigger disconnector assembly from the discharged orientation to the charged orientation when the reset lever moves from the open position to the closed position, to position the trigger nose in the set position in preparation to be received by the trigger notch in the cocked position of the

hammer and to position the disconnector in the disengaged position of the disconnector hook relative to the hammer disconnect notch.

2. The trigger mechanism according to claim 3, further comprising a spring that keeps tension on the reset lever urging the reset lever toward the closed position.

3. The trigger mechanism according to claim 2, wherein the reset lever isolates the hammer from the trigger disconnector assembly, preventing the hammer from striking the trigger disconnector assembly in the past cocked position of the hammer.

4. A trigger mechanism, comprising:

a trigger disconnector assembly having a trigger nose, and a disconnector having a disconnector hook and a cam surface;

a reset lever mounted for pivotal movement between open and closed positions;

the trigger disconnector assembly mounted for pivotal movement between charged and discharged orientations, the charged orientation comprises a set position of the trigger nose and a disengaged position of the disconnector hook, and the discharged orientation comprises a released position of the trigger nose and an engaged position of the disconnector hook;

a hammer includes a striking end including a striking surface and an opposed hammer tail, a hammer disconnect notch, a pivot end pivotable about a hammer pivot between a forward position of the striking end, a cocked position of the striking end, and a past-cocked position of the striking end, and a trigger notch formed in the pivot end for receiving the trigger nose in the set position of the trigger nose and the cocked position of the hammer; and

the cam surface of the trigger disconnector assembly is in mechanical communication with the reset lever, the hammer tail of the striking end of the hammer strikes the reset lever in the past-cocked position the hammer pivoting the reset lever from the open position to the closed position, the reset lever acting on the cam surface to pivot the trigger disconnector assembly from the discharged orientation to the charged orientation when the reset lever moves from the open position to the closed position, to position the trigger nose in the set position in preparation to be received by the trigger notch in the cocked position of the hammer and to position the disconnector in the

disengaged position of the disconnector hook relative to the hammer disconnect notch.

5. The trigger mechanism according to claim 4, a spring that keeps tension on the reset lever urging the reset lever toward the closed position.

6. The trigger mechanism according to claim 5, wherein the reset lever isolates the hammer from the trigger disconnector assembly, preventing the hammer from striking the trigger disconnector assembly in the past cocked position of the hammer.

7. The trigger mechanism according to claim 6, wherein the hammer tail of the hammer strikes the reset lever in the past-cocked position of the hammer at a location between the cam surface and the disconnector hook.

8. A trigger mechanism, comprising:

    a trigger body having a trigger nose and a trigger pivot for pivotally coupling the trigger body to a firearm for movement of the trigger nose between set and released positions;

    a reset lever mounted for pivotal movement between open and closed positions;

    a disconnector having a disconnector hook, and a disconnector pivot pivotally coupling the disconnector to the trigger pivot for movement of the disconnector hook between disengaged and engaged positions in response to pivotal movement of the trigger body between the set and released positions of the trigger nose, respectively;

    a hammer includes a striking end, a hammer disconnect notch, a pivot end pivotable about a hammer pivot between a firing position of the striking end, a cocked position of the striking end, and a past-cocked position of the striking end, and a trigger notch formed in the pivot end for receiving the trigger nose in the cocked position of the hammer; and

        the disconnector is in mechanical communication with the reset lever, the striking end of the hammer strikes the reset lever in the past-cocked position of the hammer pivoting the reset lever from the open position to the closed position, the reset lever acting on the disconnector to concurrently pivot the disconnector from the engaged position of the disconnector hook to the disengaged position of the disconnector hook and the trigger body from the released position of the trigger nose to the set position of the trigger nose in preparation to be received by the trigger notch in the cocked position of the hammer when the reset lever moves from the open position to the closed position.

9. The trigger mechanism according to claim 8, a spring that keeps tension on the reset lever urging the reset lever toward the closed position.

10. The trigger mechanism according to claim 9, wherein the reset lever isolates the hammer from the trigger body and the disconnector, preventing the hammer from striking the trigger body and the disconnector in the past cocked position of the hammer.

11. A trigger mechanism, comprising:

a trigger body having a trigger nose and a trigger pivot for pivotally coupling the trigger body to a firearm for movement of the trigger nose between set and released positions;

a reset lever mounted for pivotal movement between open and closed positions;

a disconnector having a disconnector lever, a disconnector hook, and a disconnector pivot pivotally coupling the disconnector to the trigger pivot for movement of the disconnector hook between disengaged and engaged positions in response to pivotal movement of the trigger body between the set and released positions of the trigger nose, respectively;

a hammer includes a striking end, a hammer disconnect notch, a pivot end pivotable about a hammer pivot between a firing position of the striking end, a cocked position of the striking end, and a past-cocked position of the striking end, and a trigger notch formed in the pivot end for receiving the trigger nose in the cocked position of the hammer; and

the disconnector lever of the disconnector is in mechanical communication with the reset lever, the striking end of the hammer strikes the reset lever in the past-cocked position of the hammer pivoting the reset lever from the open position to the closed position, the reset lever acting on the disconnector lever to concurrently pivot the disconnector from the engaged position of the disconnector hook to the disengaged position of the disconnector hook and the trigger body from the released position of the trigger nose to the set position of the trigger nose in preparation to be received by the trigger notch in the cocked position of the hammer when the reset lever moves from the

open position to the closed position.

12. The trigger mechanism according to claim 11, a spring that keeps tension on the reset lever urging the reset lever toward the closed position.

13. The trigger mechanism according to claim 12, wherein the reset lever isolates the hammer from the trigger body and the disconnector, preventing the hammer from striking the trigger body and the disconnector in the past cocked position of the hammer.

14. The trigger mechanism according to claim 6, wherein the striking end of the hammer strikes the reset lever in the past-cocked position of the hammer at a location between the disconnector lever and the disconnector hook.

15. A trigger mechanism, comprising:

a trigger body having a trigger nose and a trigger pivot for pivotally coupling the trigger body to a firearm for movement of the trigger nose between set and released positions;

a reset lever mounted for pivotal movement between open and closed positions; a disconnector having a disconnector hook, a cam surface, and a disconnector pivot pivotally coupling the disconnector to the trigger pivot for movement of the disconnector hook between disengaged and engaged positions in response to pivotal movement of the trigger body between the set and released positions of the trigger nose, respectively;

a hammer includes a striking end, a hammer disconnect notch, a pivot end pivotable about a hammer pivot between a firing position of the striking end, a cocked position of the striking end, and a past-cocked position of the striking end, and a trigger notch formed in the pivot end for receiving the trigger nose in the cocked position of the hammer; and

the cam surface of the disconnector is in mechanical communication with the reset lever, the striking end of the hammer strikes the reset lever in the past-cocked position of the hammer pivoting the reset lever from the open position to the closed position, the reset lever acting on the cam surface to concurrently pivot the disconnector from the engaged position of the disconnector hook to the disengaged position of the disconnector hook and the trigger body from the released position of the trigger nose to the set position of the trigger nose in preparation to be received by the trigger notch in the cocked position of the hammer when the reset lever moves from the open position to the

closed position.

16. The trigger mechanism according to claim 15, a spring that keeps tension on the reset lever urging the reset lever toward the closed position.

17. The trigger mechanism according to claim 16, wherein the reset lever isolates the hammer from the trigger body and the disconnector, preventing the hammer from striking the trigger body and the disconnector in the past cocked position of the hammer.

18. The trigger mechanism according to claim 6, wherein the striking end of the hammer strikes the reset lever in the past-cocked position of the hammer at a location between the cam surface and the disconnector hook.

19. A trigger mechanism, comprising:

a trigger assembly with a hammer having a trigger notch, a trigger body has a trigger nose, a trigger tail, and a trigger, the trigger nose for receiving the trigger notch in a cocked position of the hammer and a set position of the trigger body and for releasing the trigger nose when the trigger body is moved a travel distance from the set position to a fired position, a disconnector coupled between the hammer and the trigger body, and a selector movable between a first position and a second position for adjusting the travel distance of the trigger body;

the selector has a first stop aligned with the tail of the trigger body in the first position, and a second stop aligned with the tail of the trigger body in the second position;

the first stop is separated from tail of the trigger body a first distance in the set position of the trigger body in the first position of the selector, and the second stop is separated from tail of the trigger body a second distance in the set position of the trigger body in the second position of the selector;

in the first position of the selector and the fired position of the trigger body the first distance between the first stop and the tail of the trigger body is closed and the tail contacts the first stop, and movement of the trigger body is arrested by the tail contacting the first stop;

in the second position of the selector and the fired position of the trigger body the second distance between the second stop and the tail of the trigger body is closed and the tail contacts the second stop, and movement of the trigger body is arrested by the tail contacting the second stop; and

the second distance is less than the first distance, wherein the travel distance of the trigger body in the second position of the selector is less than the travel distance of the trigger body in the first position of the selector.

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A TRIGGER MECHANISM

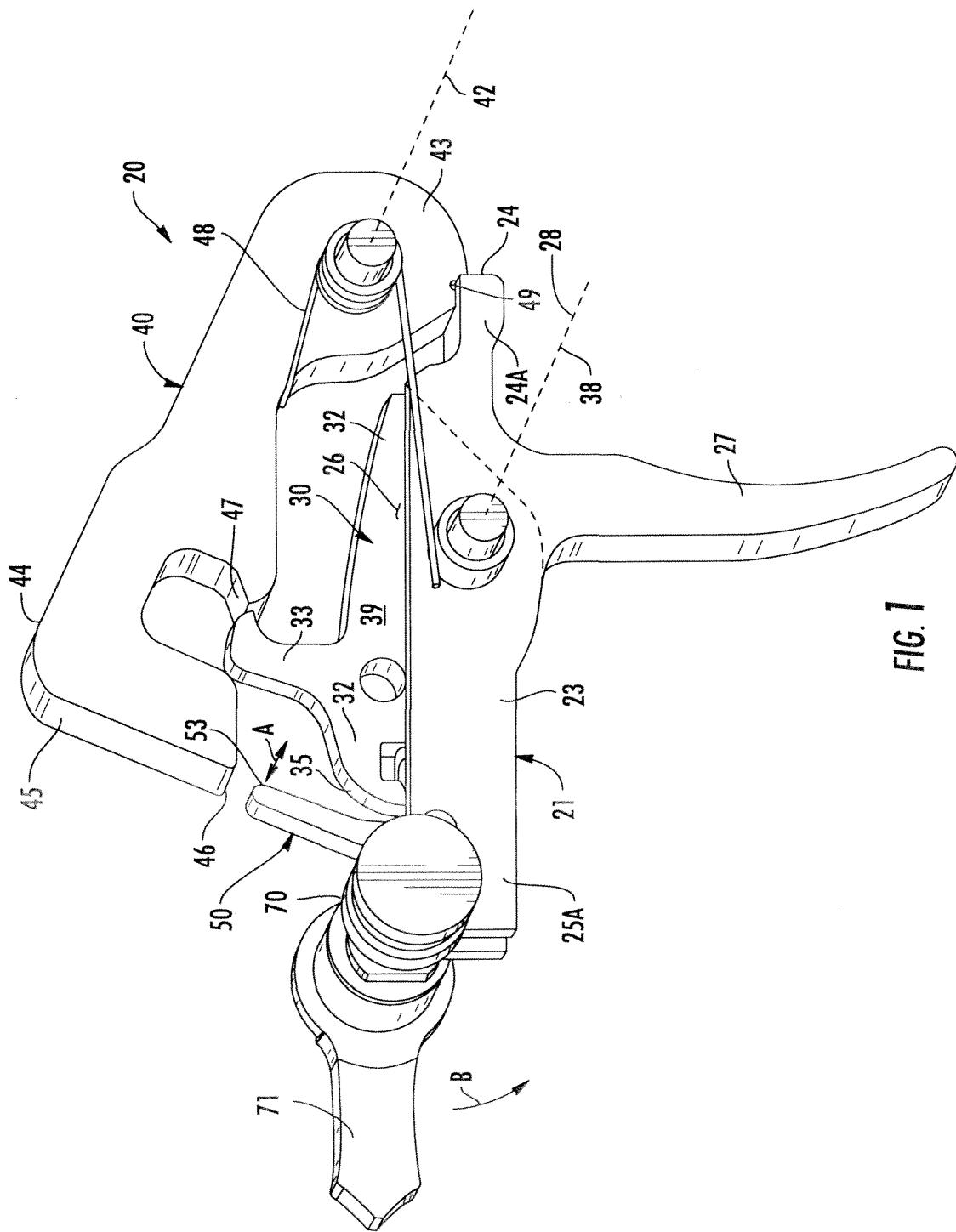
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ABSTRACT

4       A trigger mechanism includes a hammer, and a trigger disconnector assembly  
5       including a trigger body having a trigger nose, and a disconnector having a disconnector  
6       hook. A reset lever is mounted for movement between open and closed positions. The  
7       trigger disconnector assembly is in mechanical communication with the reset lever. A  
8       striking end of the hammer strikes the reset lever in a past-cocked position of the hammer  
9       moving the reset lever from the open position to the closed position, the reset lever acting  
10      on the trigger disconnector assembly to reset the trigger body and the disconnector in the  
11      past-cocked position of the hammer in preparation for securing the hammer in a cocked  
12      position preparatory to firing by another trigger pull of the trigger body.

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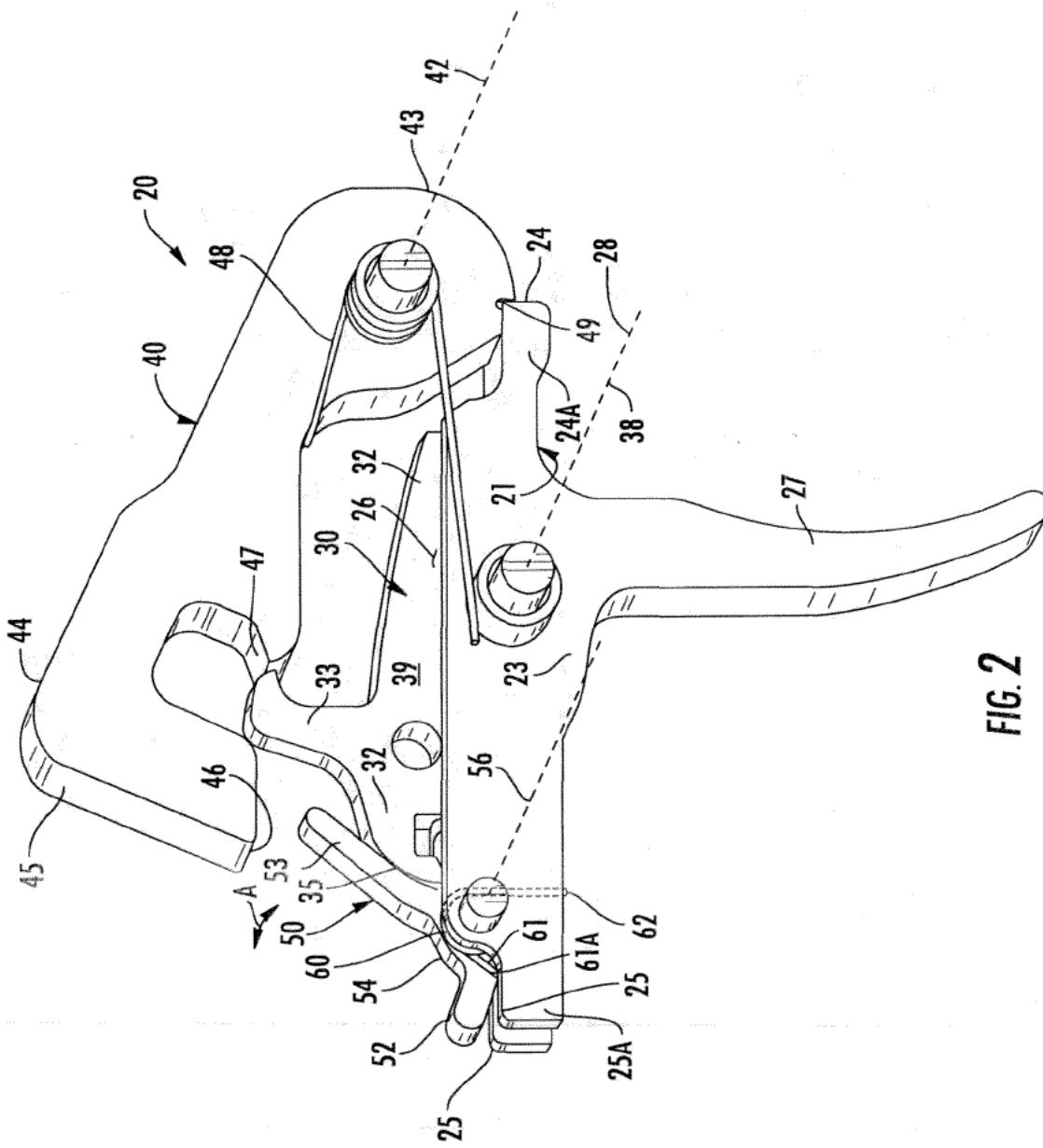


FIG. 2

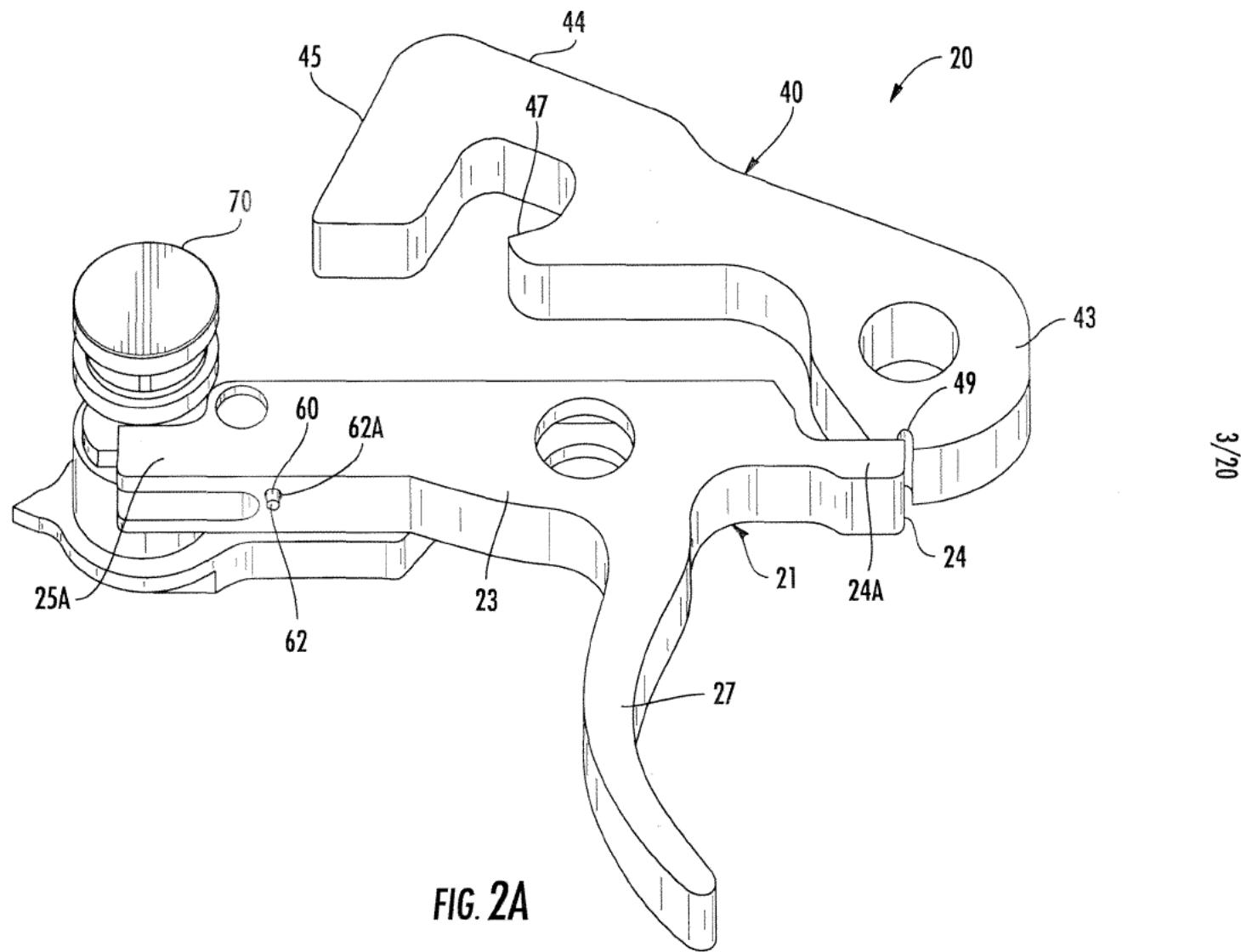


FIG. 2A

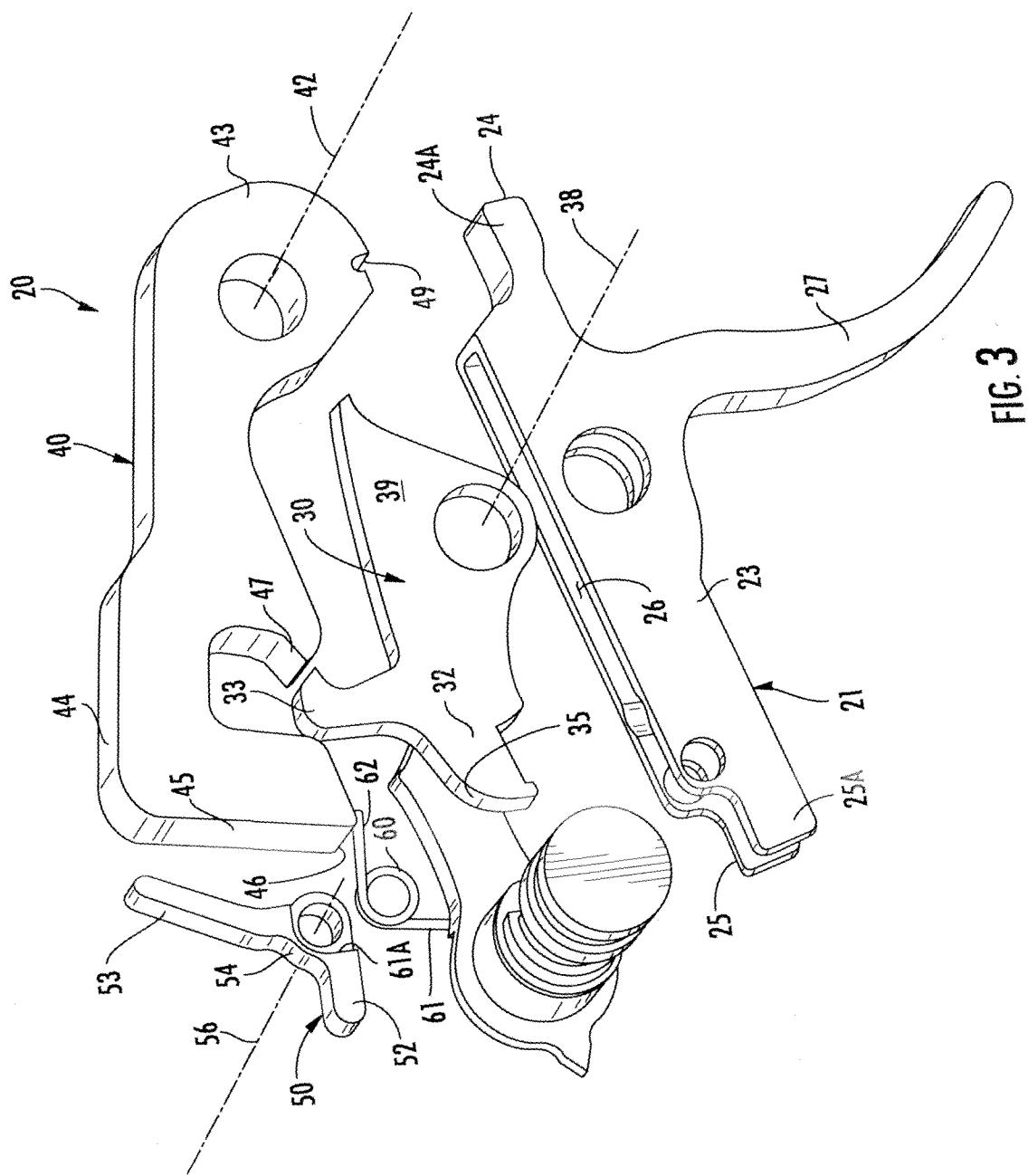


FIG. 3

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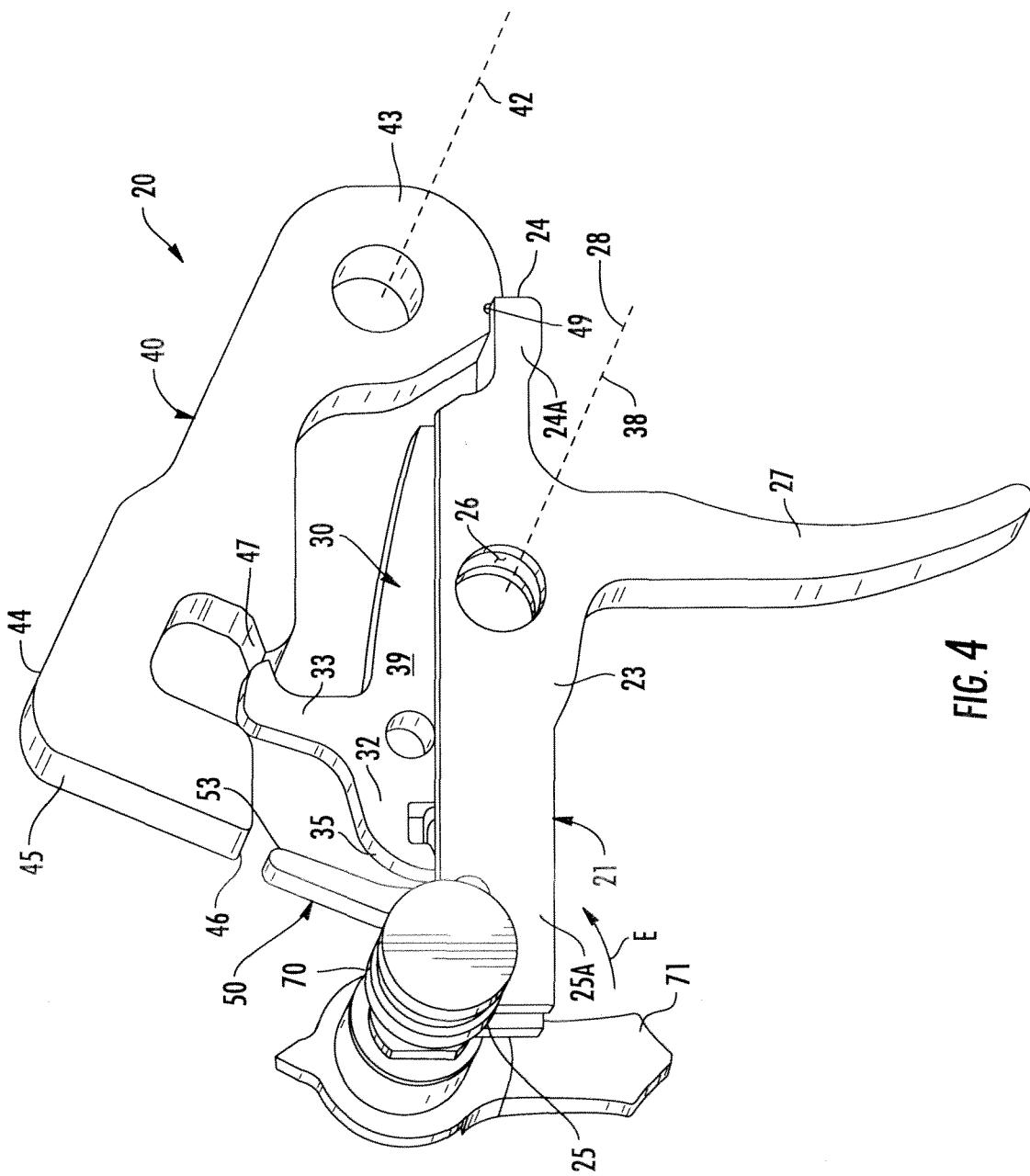
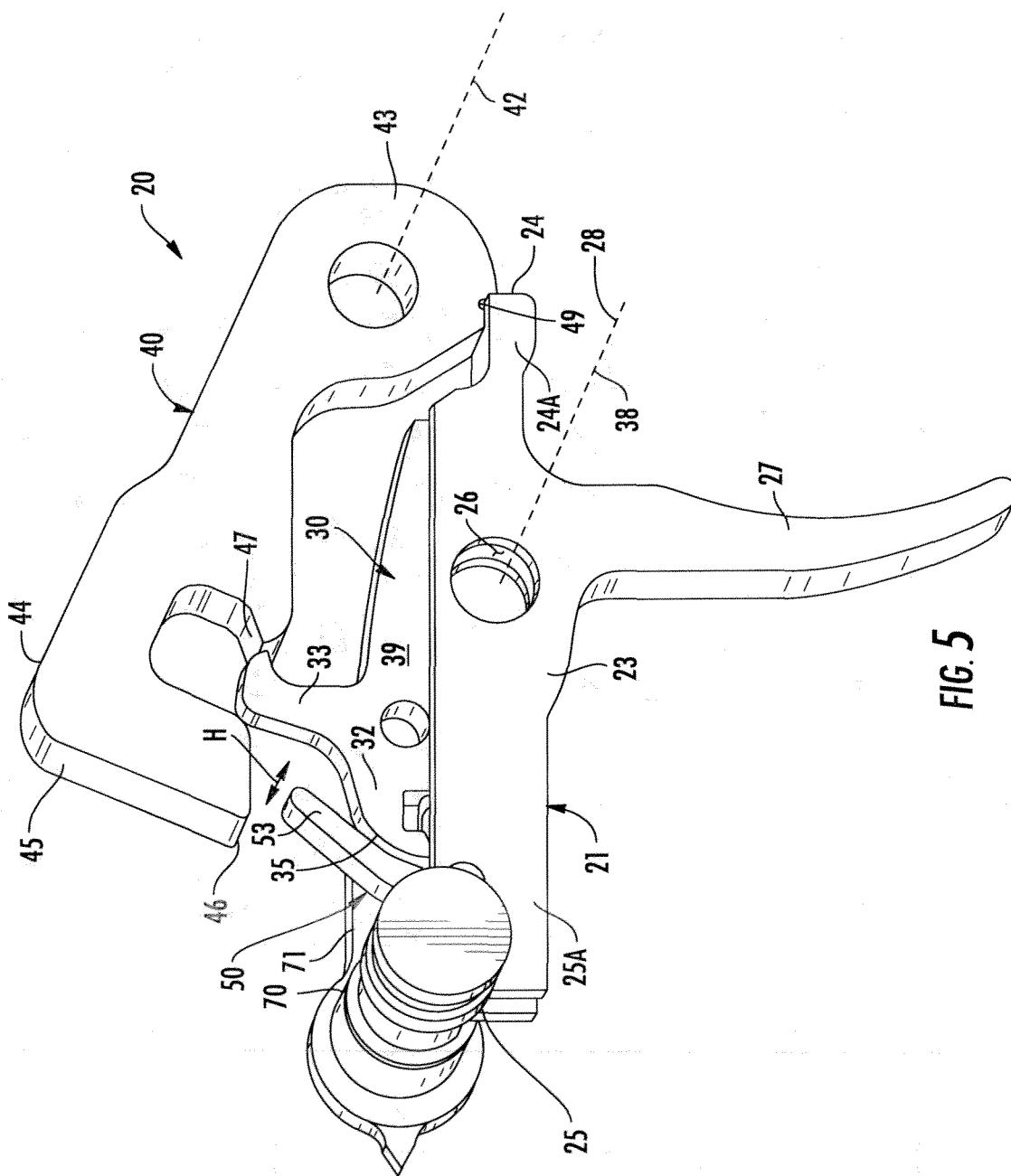
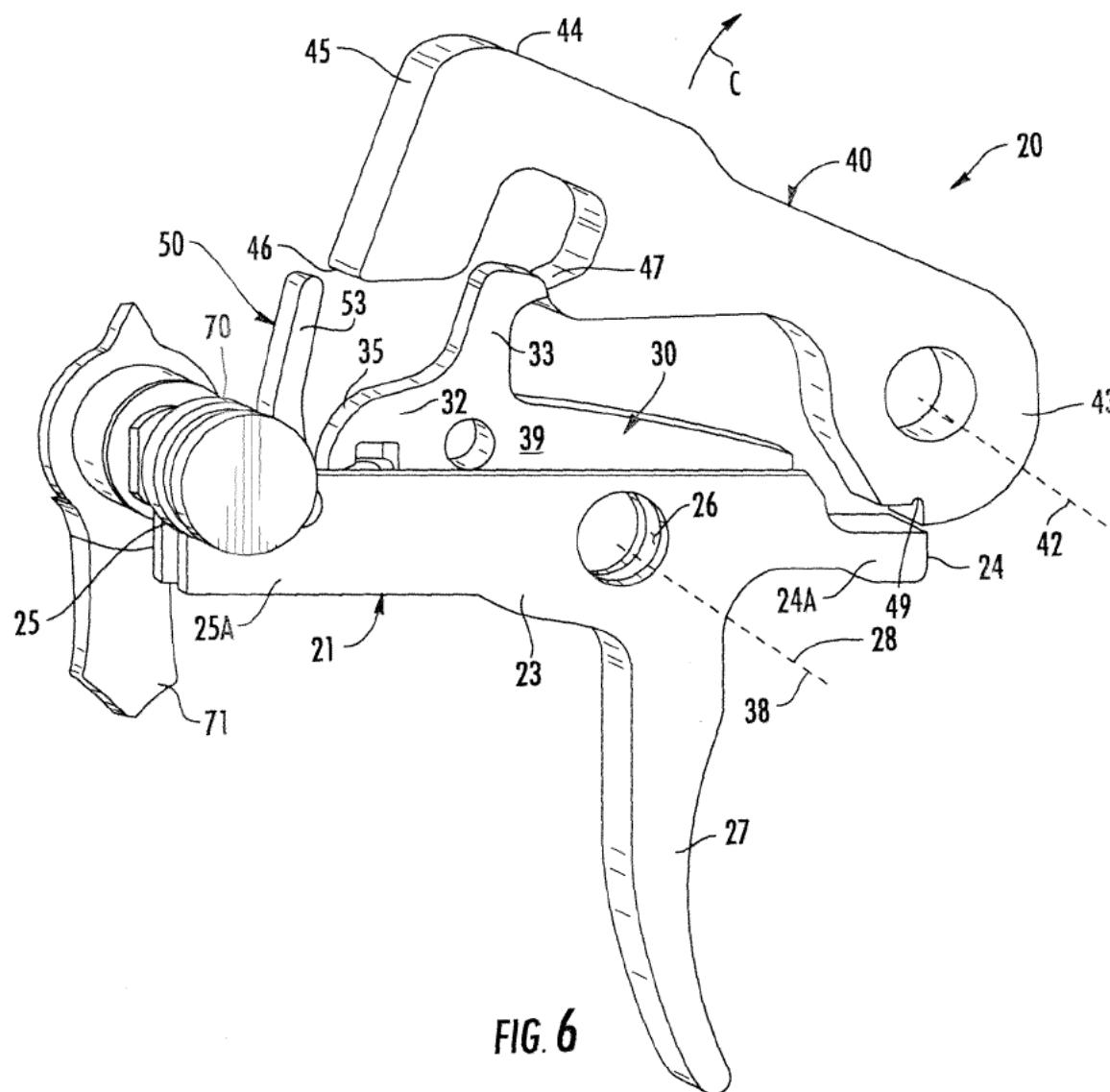


FIG. 4

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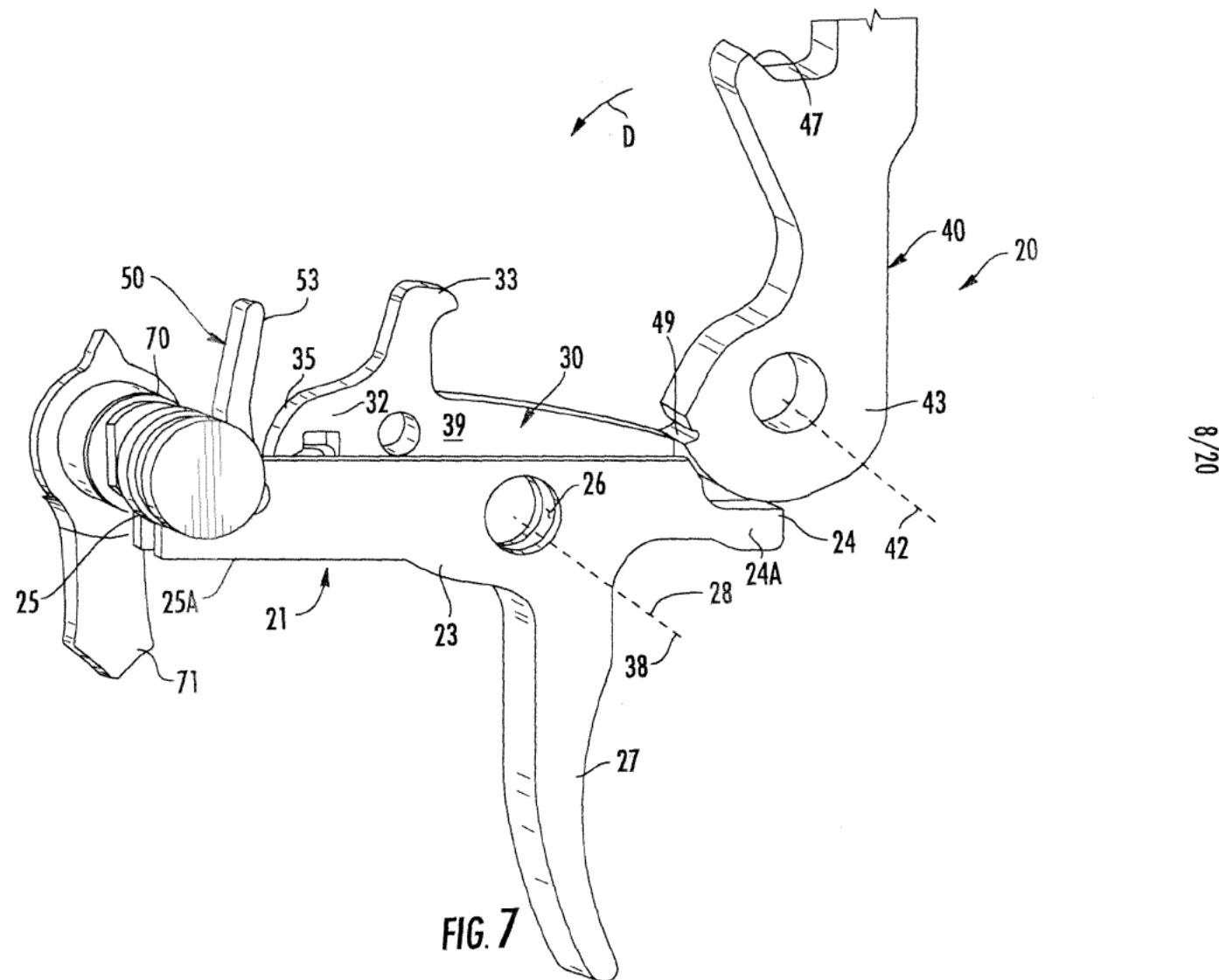


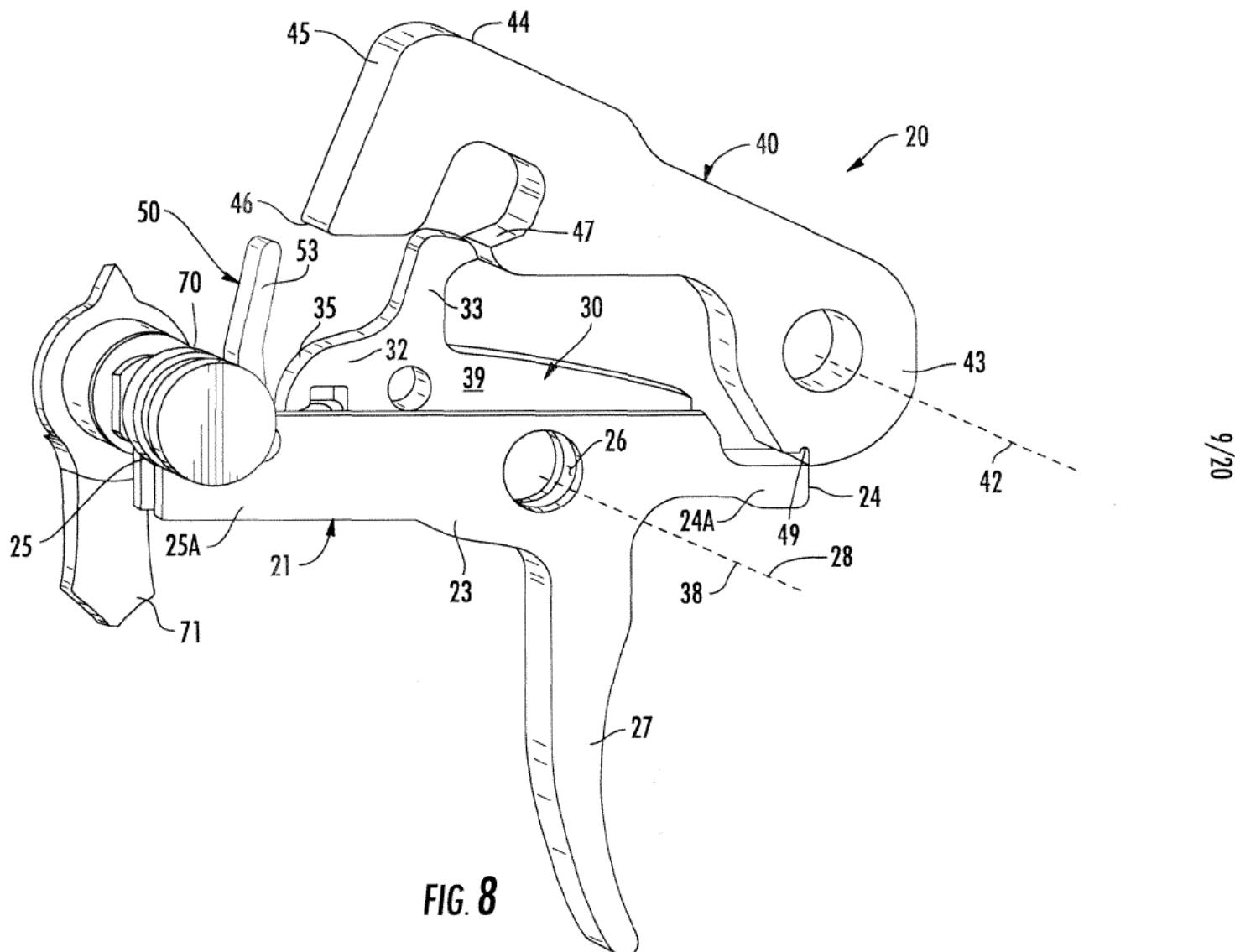
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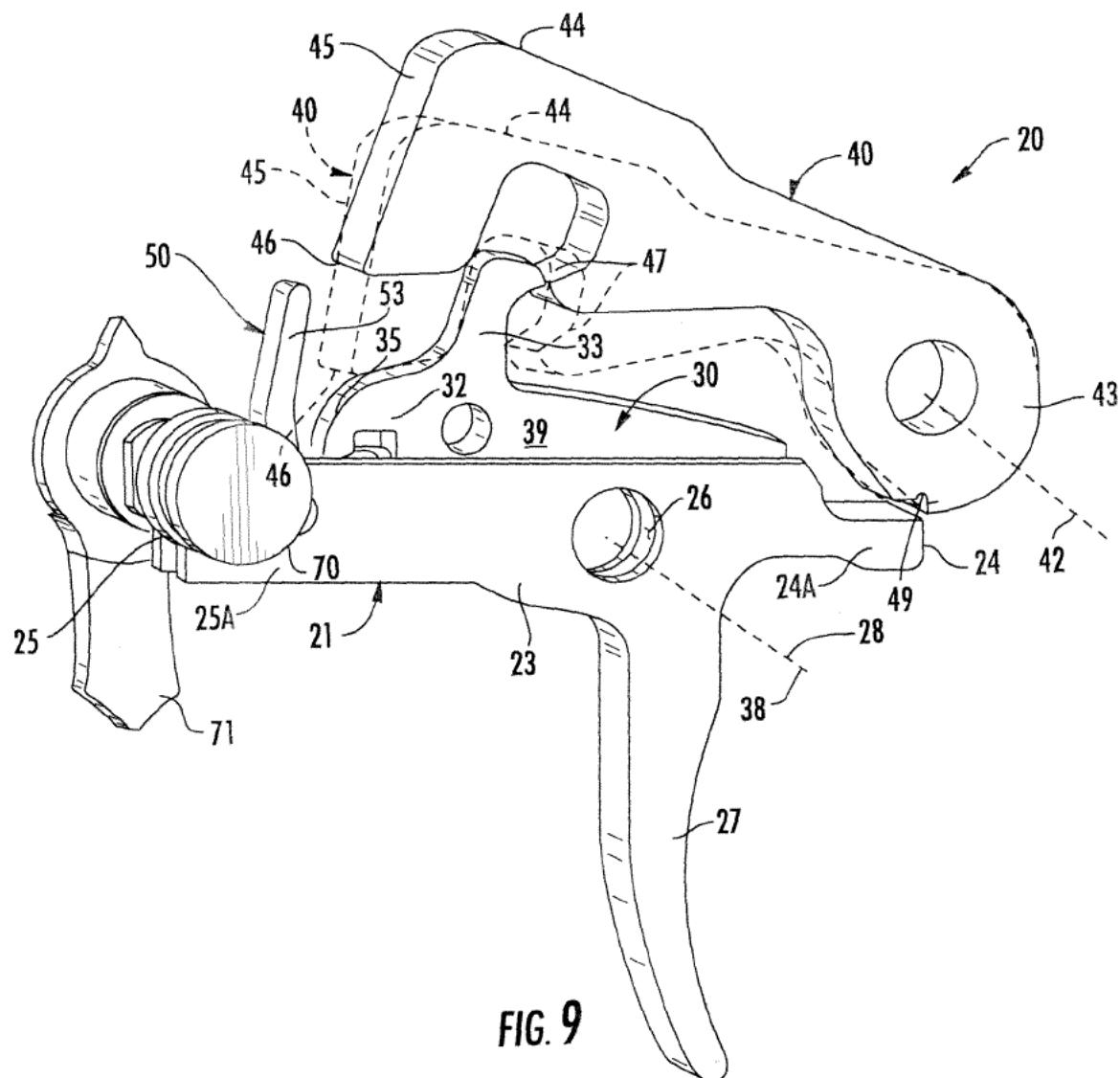


FIG. 9

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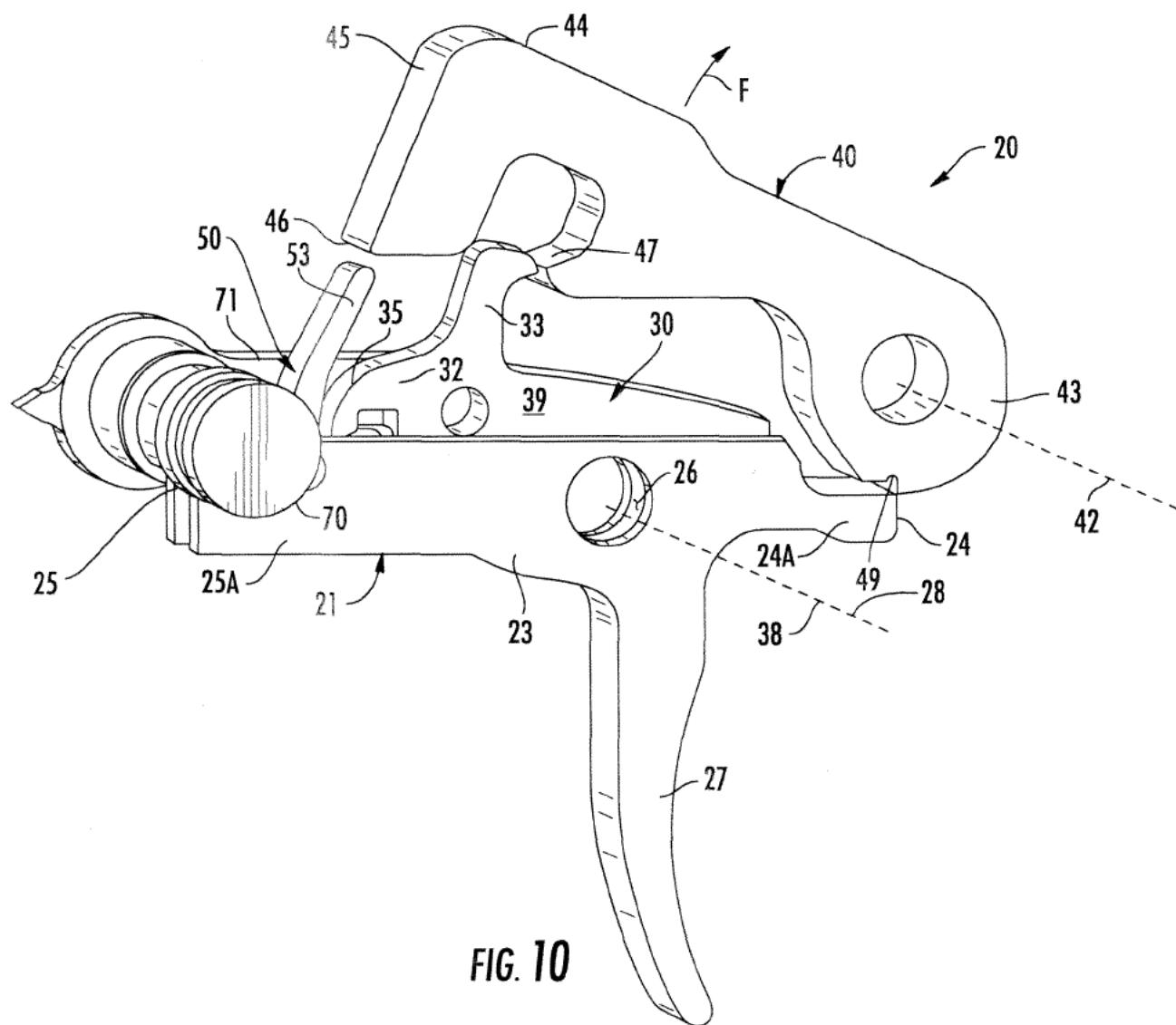


FIG. 10

ATF0070

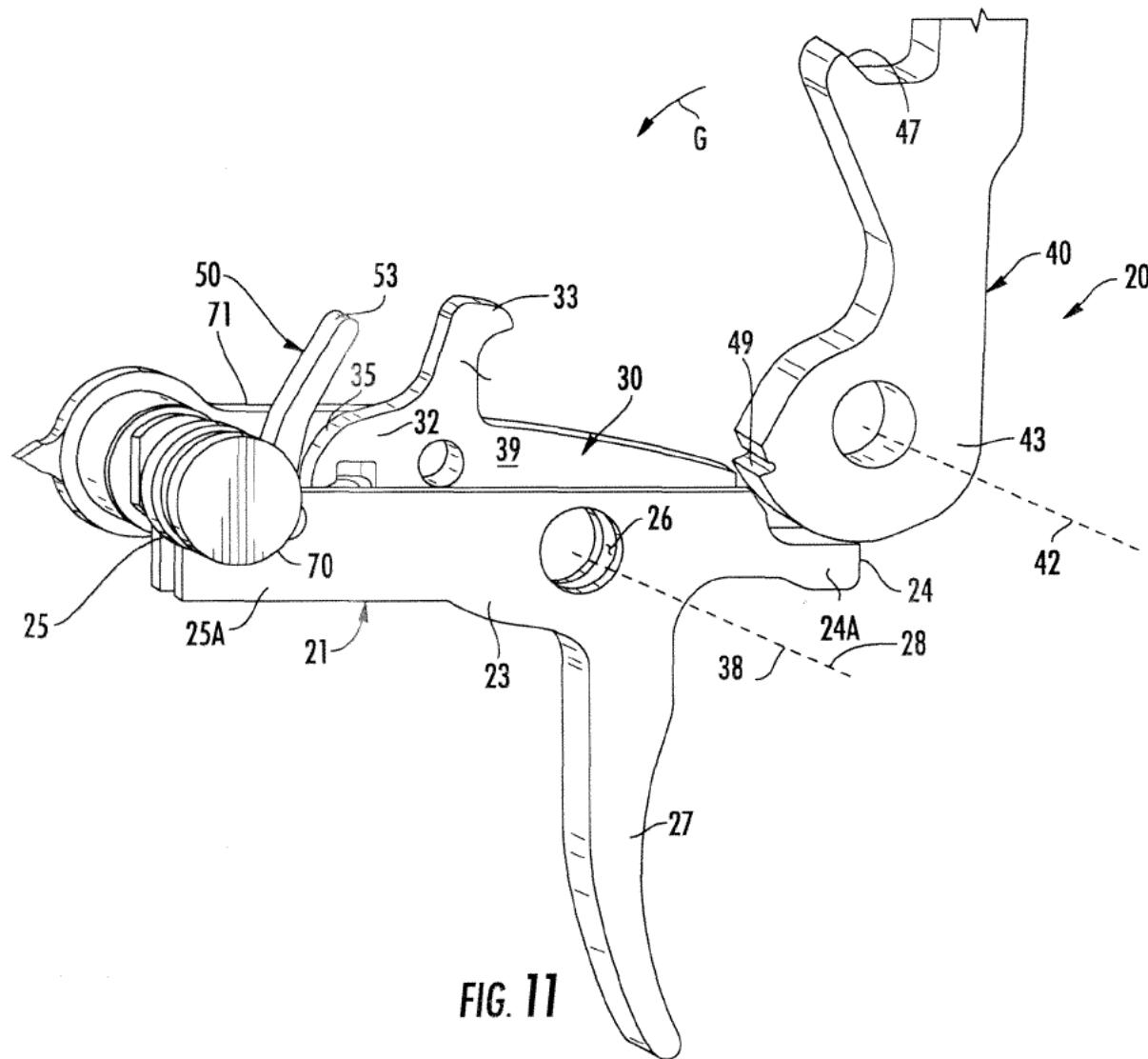
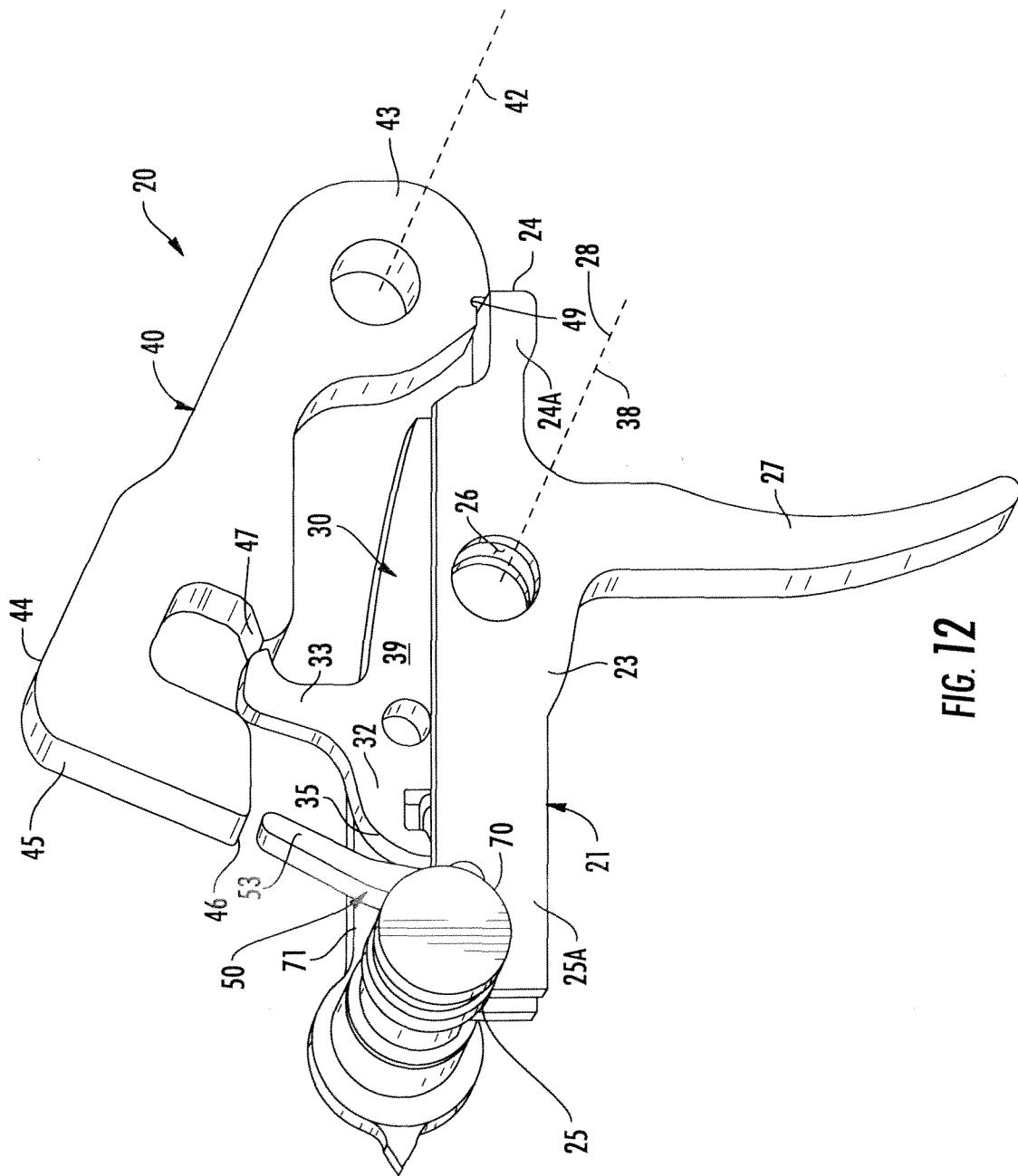


FIG. 11

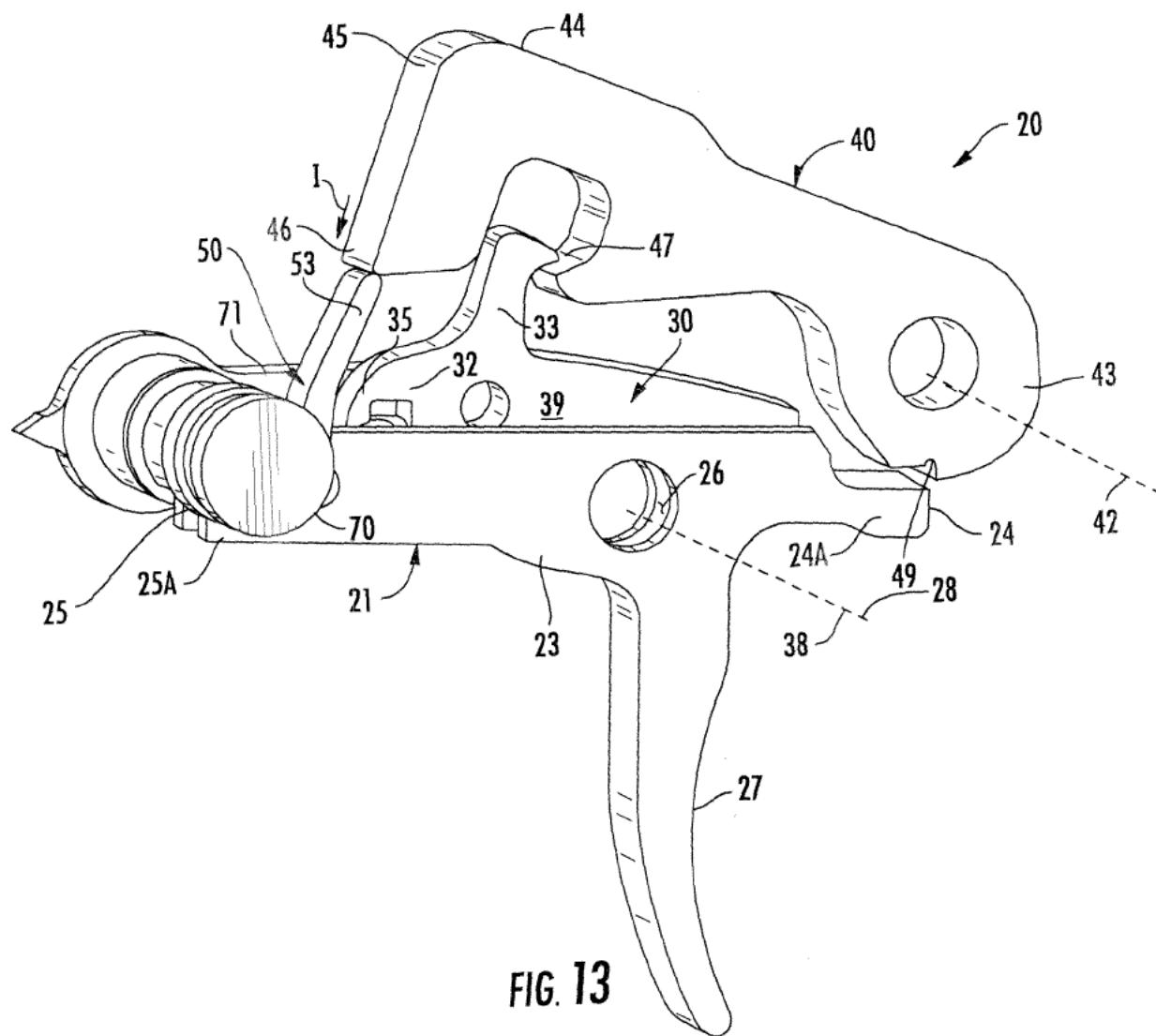
12/20

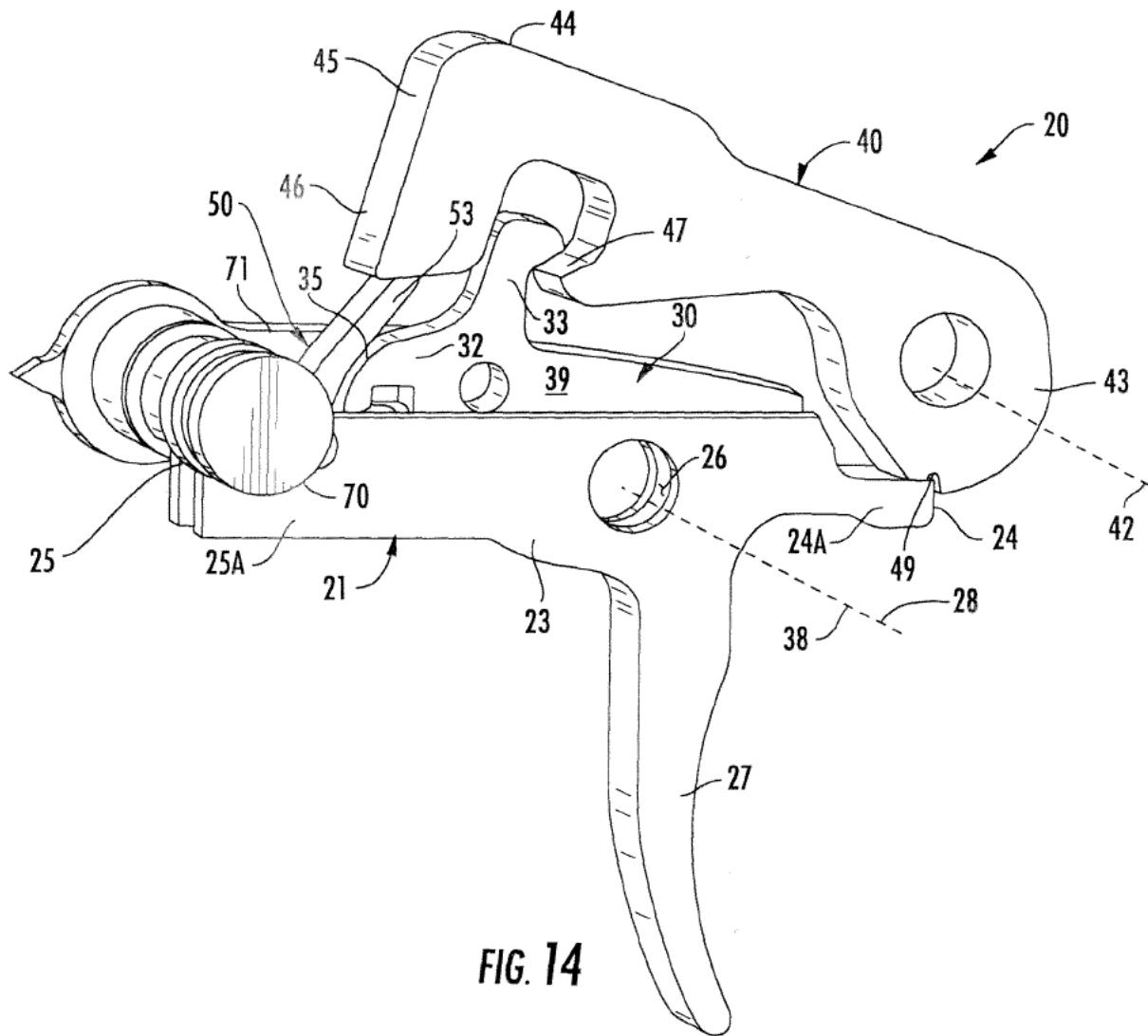
13/20



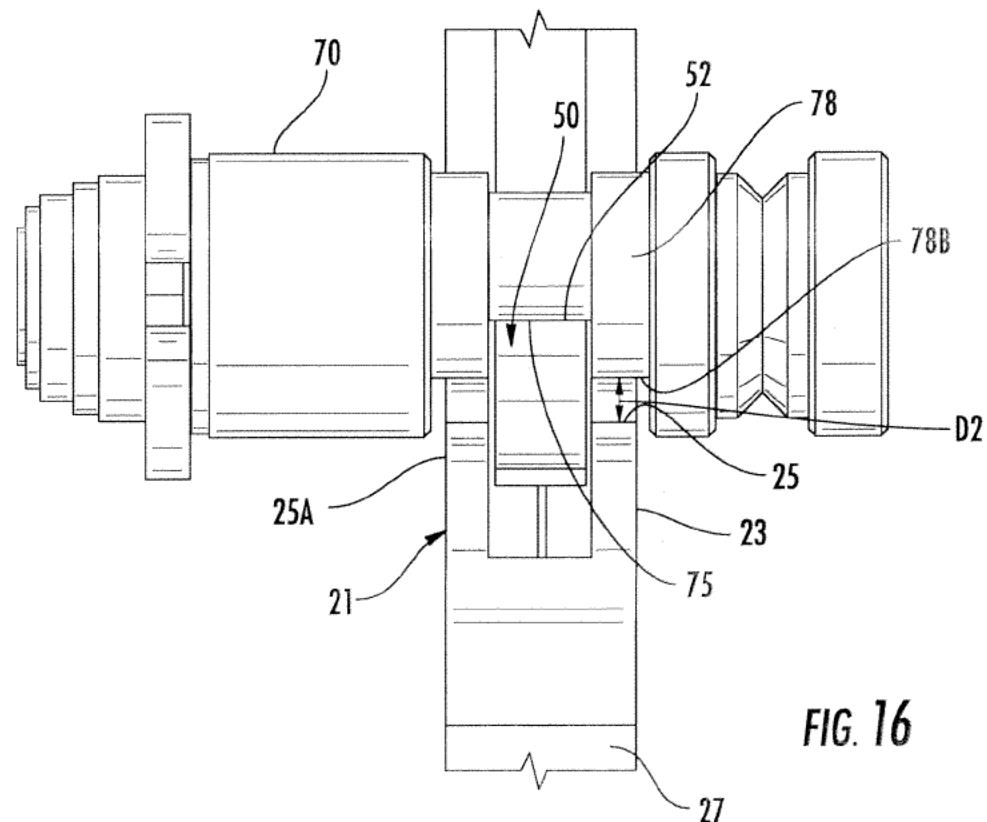
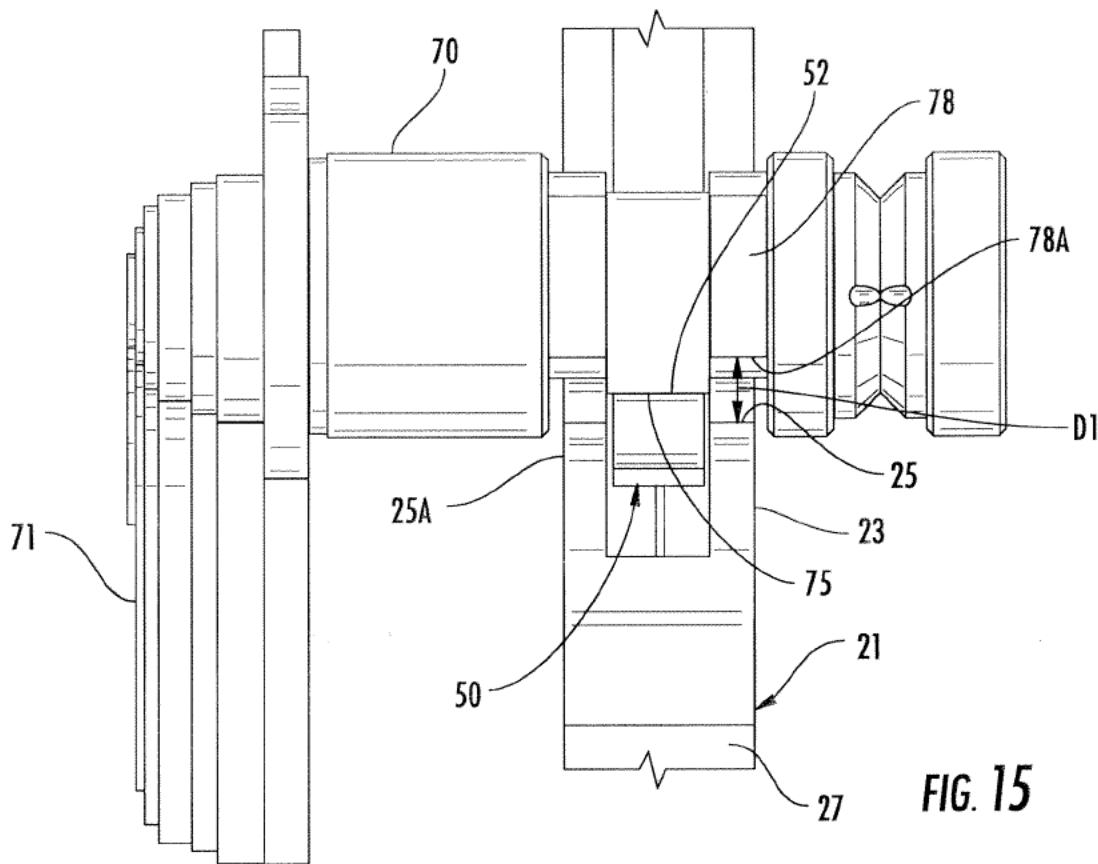
ATF0072

14/20





16/20



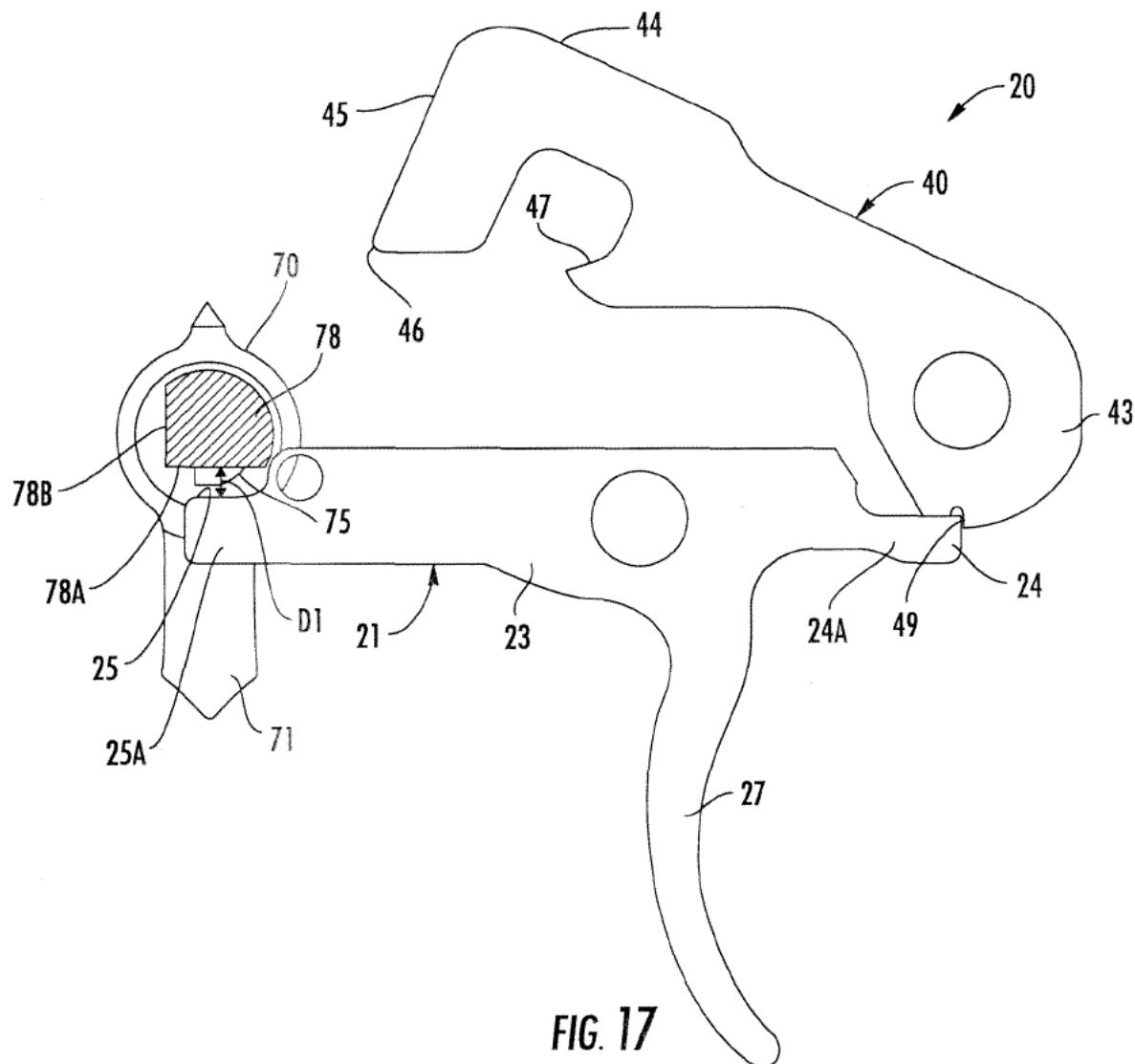
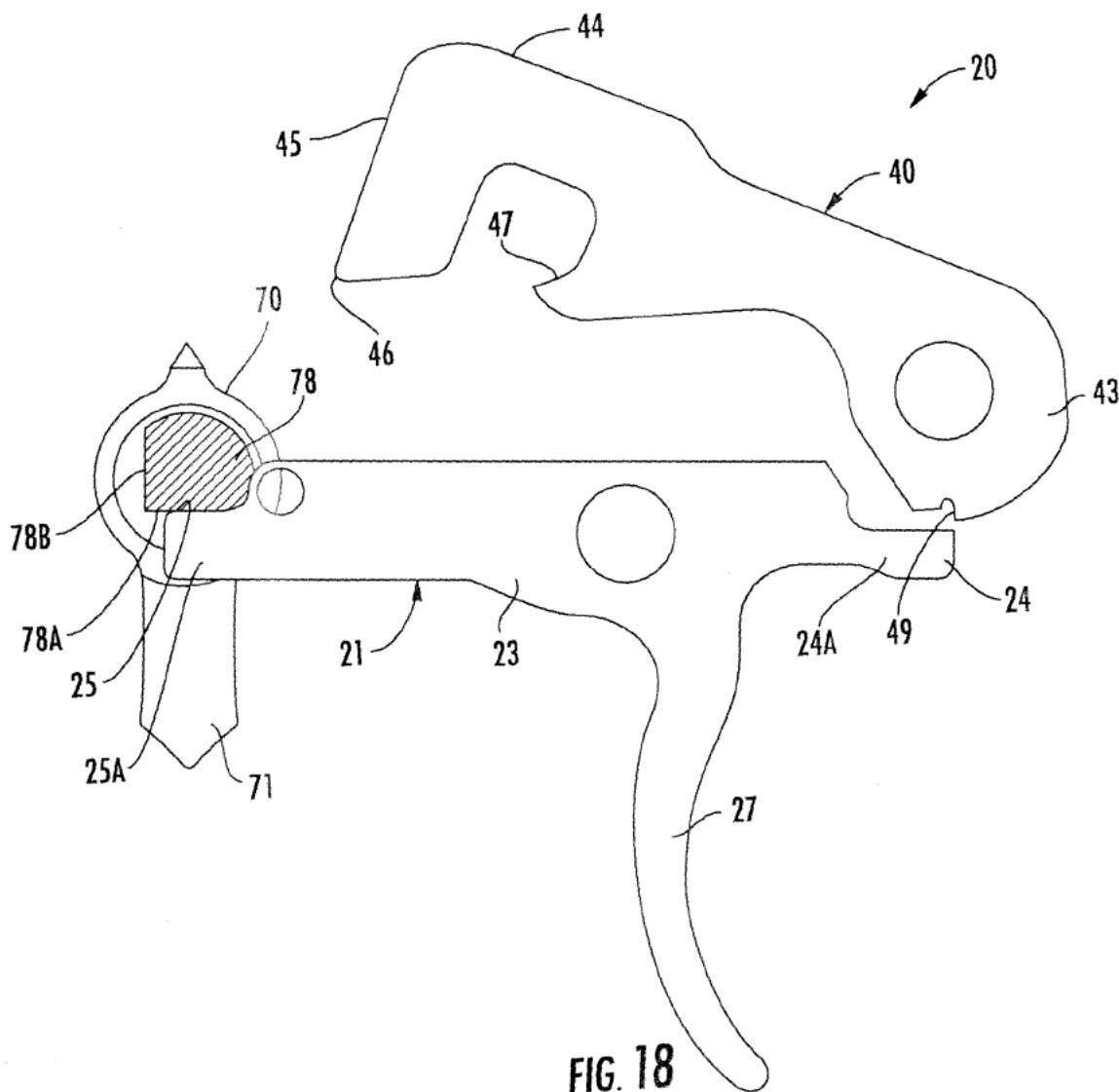
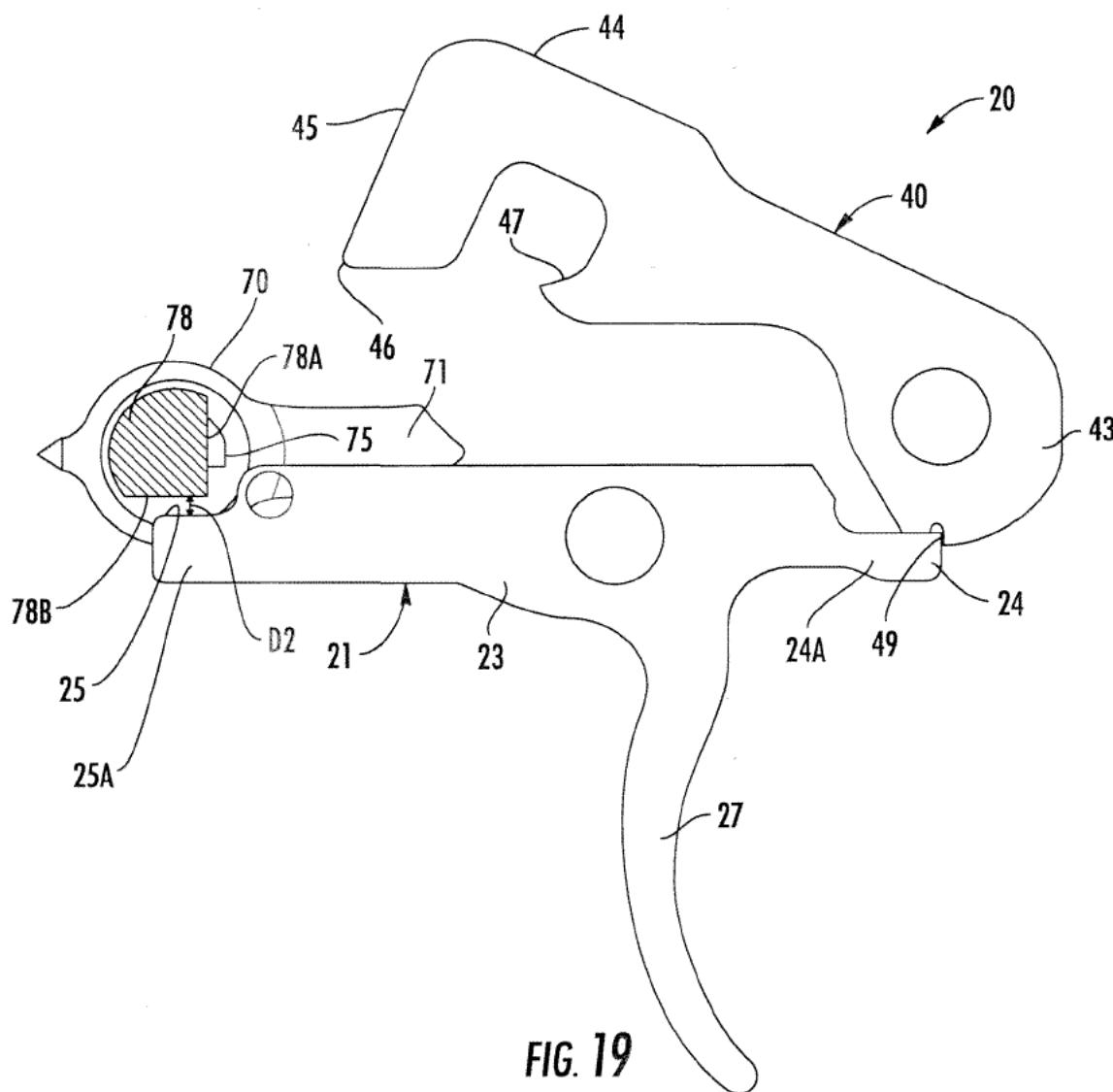
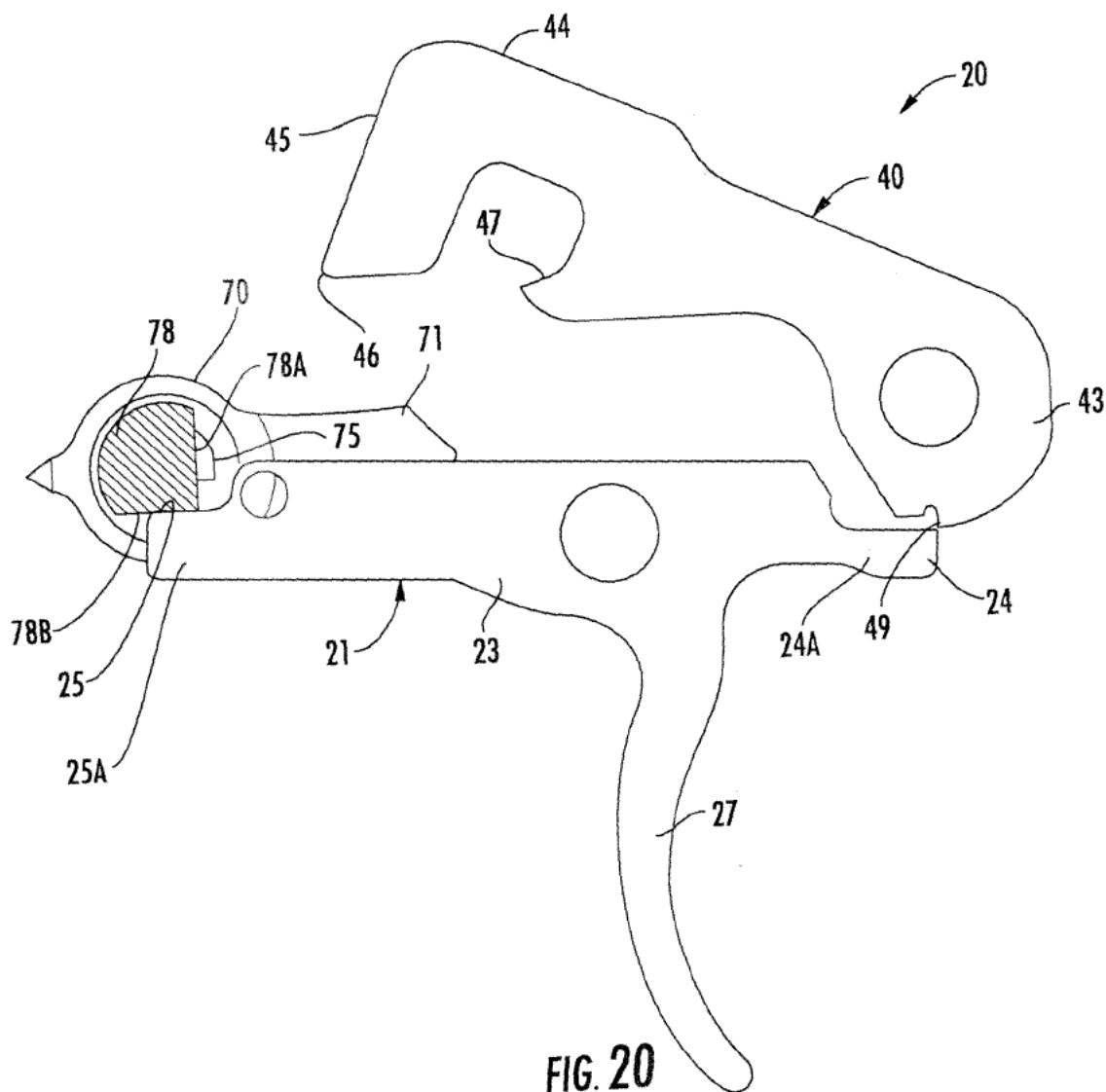


FIG. 17



18/20





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545071488457

Ship (P/U) date  
Thur 10/31/2013 3:08 pm  
Martinsburg, WV US



Actual delivery  
Fri 11/01/2013 2:47 pm  
NEW RIVER, AZ US

### Travel History

Date/Time	Activity	Location
<b>- 11/01/2013 - Friday</b>		
2:47 pm	Delivered Left at front door. Package delivered to recipient address - release authorized	NEW RIVER, AZ
7:37 am	On FedEx vehicle for delivery	PHOENIX, AZ
7:28 am	At local FedEx facility	PHOENIX, AZ
5:10 am	At destination sort facility	PHOENIX, AZ
4:59 am	Departed FedEx location	INDIANAPOLIS, IN
12:30 am	Arrived at FedEx location	INDIANAPOLIS, IN
<b>- 10/31/2013 - Thursday</b>		
7:09 pm	Left FedEx origin facility	HAGERSTOWN, MD
2:58 pm	Shipment information sent to FedEx	
3:08 pm	Picked up	HAGERSTOWN, MD

EVAL-  
301-071-MPC

Local Scan Time

### Shipment Facts

Tracking number	545071488457	Service	FedEx Priority Overnight
Weight	1 lbs	Delivered To	Residence
Total pieces	1	Total shipment weight	1 lbs / 0.5 kgs
Shipper reference	Eval 301071	Packaging	Your Packaging
Special handling section	Deliver Weekday, Residential Delivery		



**U.S. Department of Justice**

Bureau of Alcohol, Tobacco,  
Firearms and Explosives

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*Martinsburg, WV 25405*

[www.atf.gov](http://www.atf.gov)

**AUG 28 2018**

907010: RKD  
3311/307385

[REDACTED]  
Buda, Texas 78610

Dear Sir,

This is in reference to your submission and accompanying correspondence to, Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF), Firearms Technology Industry Services Branch (FTISB), accompanied by an AR-15 type rifle equipped with what is described as the [REDACTED] AR1 trigger system (see enclosed photos). Specifically, you requested an examination and classification of this sample with regard to the amended Gun Control Act of 1968 (GCA) and the National Firearms Act (NFA).

As you know, the National Firearms Act (NFA), 26 U.S.C. § 5845(b), defines the term “machinegun” as—

*...any weapon which shoots, is designed to shoot, or can be readily restored to shoot, automatically more than one shot, without manual reloading, by a single function of the trigger. The term shall also include the frame or receiver of any such weapon, any part designed and intended solely and exclusively, or combination of parts designed and intended, for use in converting a weapon into a machinegun, and any combination of parts from which a machinegun can be assembled if such parts are in the possession or under the control of a person.*

As specified in the GCA, 18 U.S.C. § 921(a)(23), the term “machinegun” has “the meaning given such term in section 5845(b) of the National Firearms Act (26 U.S.C. 5845(b)).

The submitted [REDACTED] AR1, is described as a “trigger-finger reset device”. You further describe the design and function of the device by explaining that “this trigger system works by mechanically pushing the trigger rapidly forward, resetting the finger and trigger to the forward

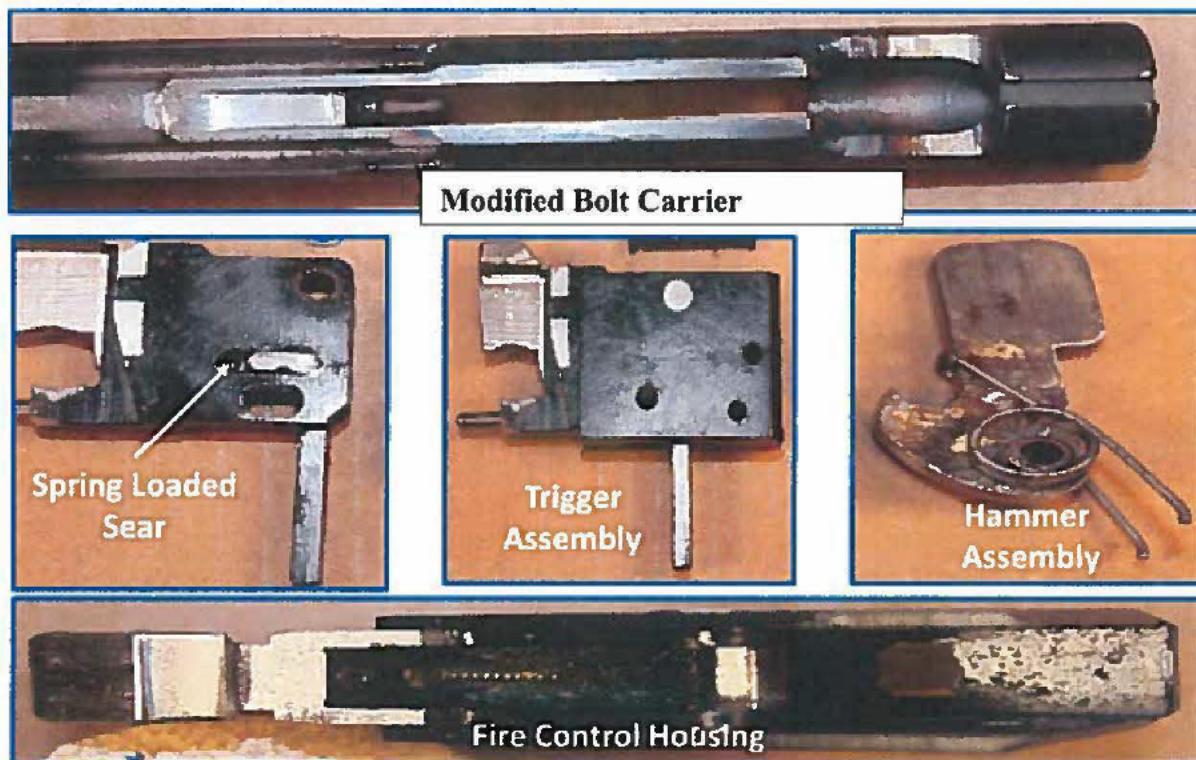
*position. This allows the user to make a decision in which they leave rearward pressure off the trigger to stop the firing sequence, or re-engage rearward pressure on the trigger to continue the firing sequence.*" As a part of this description, you note that all of the components of the [REDACTED]

[REDACTED] ARI trigger are newly designed and include a bolt, housing, trigger, hammer, sear, springs and pins. FTISB notes that US Patent 9568264 (Flex-fire technology) covers the device, which is described as a technology to provide the potential of increasing both the rate of fire and the precision of fire at higher rates beyond the fundamental design capabilities of pre-existing semi-automatic arms.

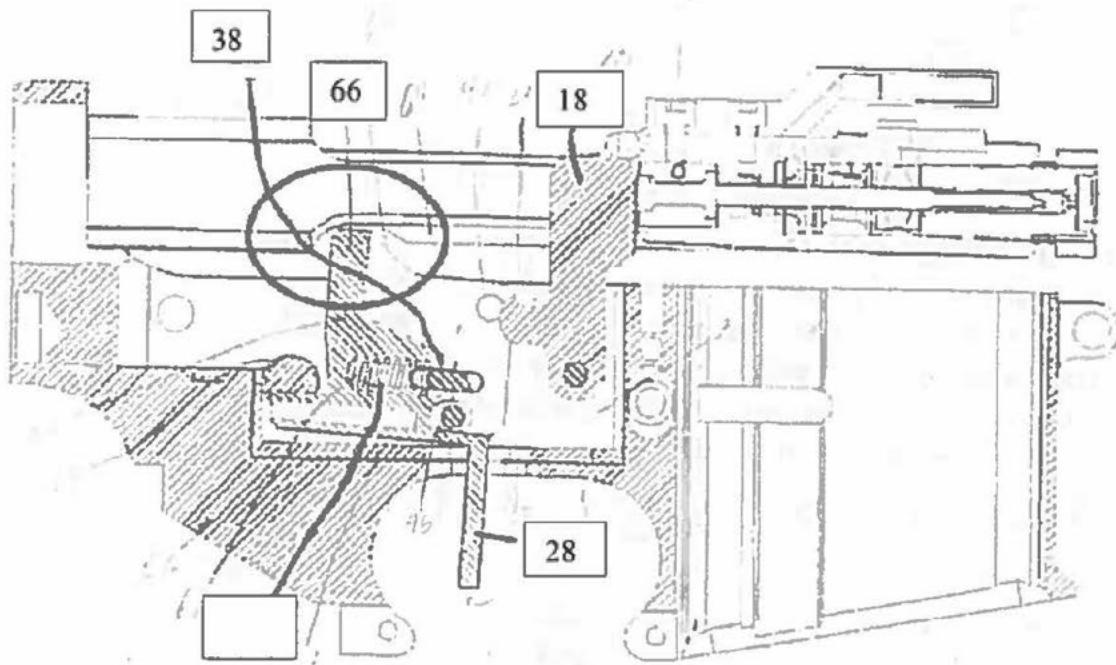
Also, your correspondence notes that ATF has previously interpreted the phrase "single function of the trigger" to mean a single movement of the trigger, whether that movement is the pull of the trigger or the release of the trigger and it is your opinion that this device submitted is only a trigger reset device and not a "machinegun" as defined.

The sample examined by FTISB personnel consists of a Colt Competition .223/5.56 caliber AR-15 pattern rifle, serial number CCR012176, which is equipped with the following items:

- Modified bolt carrier.
- Newly constructed hammer assembly.
- Newly constructed fire control housing.
- Newly constructed trigger assembly having steel block mounted on rear of assembly.
- Newly constructed spring loaded sear assembly.
- Miscellaneous retaining axles/screws, plungers/springs.



Provided illustration of [REDACTED] AR1 Trigger Device.



This illustration depicts how the parts interact.

No. 66 is the extension of the trigger that rests in the bolt cam.

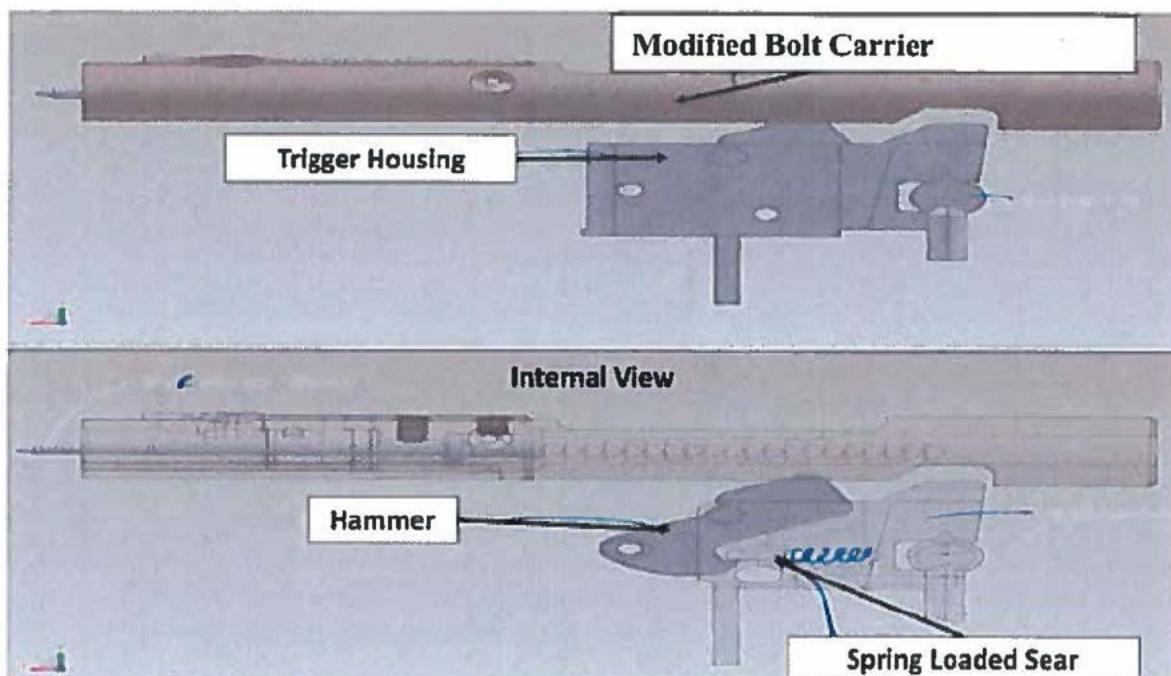
No. 28 is the portion of the trigger that interacts with the user's finger.

No. 38 is the spring loaded sear.

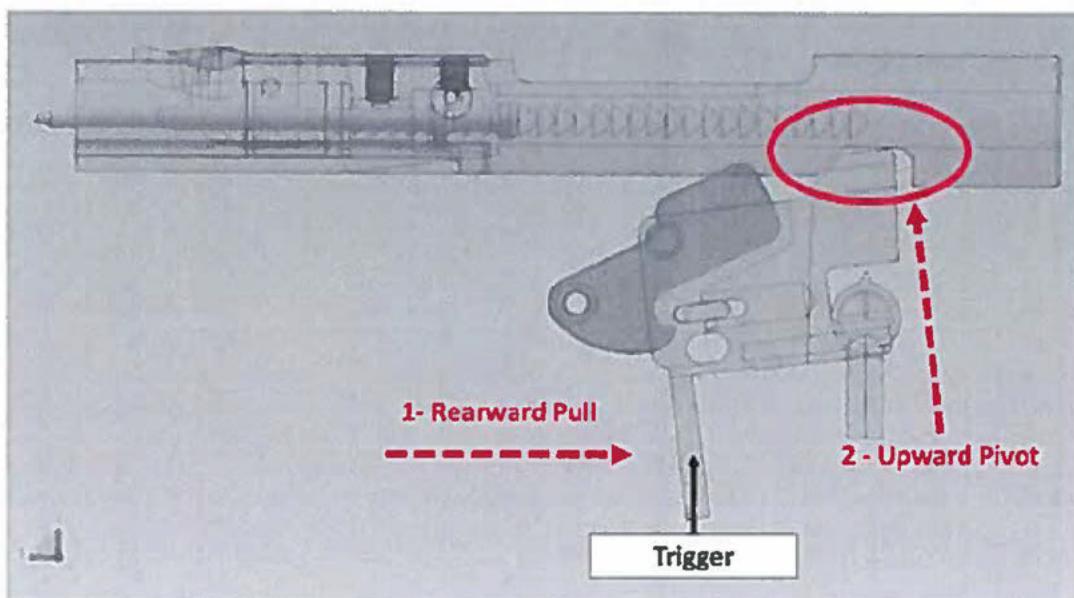
No. 18 is the hammer.

The written correspondence received from [REDACTED] with the sample, provided the following statements and pictures offering a description of how the device differed in function from that of a standard unmodified AR-15 pattern rifle [Note: FTISB updated the pictures relevant to FTISB's analysis of the [REDACTED] AR1]:

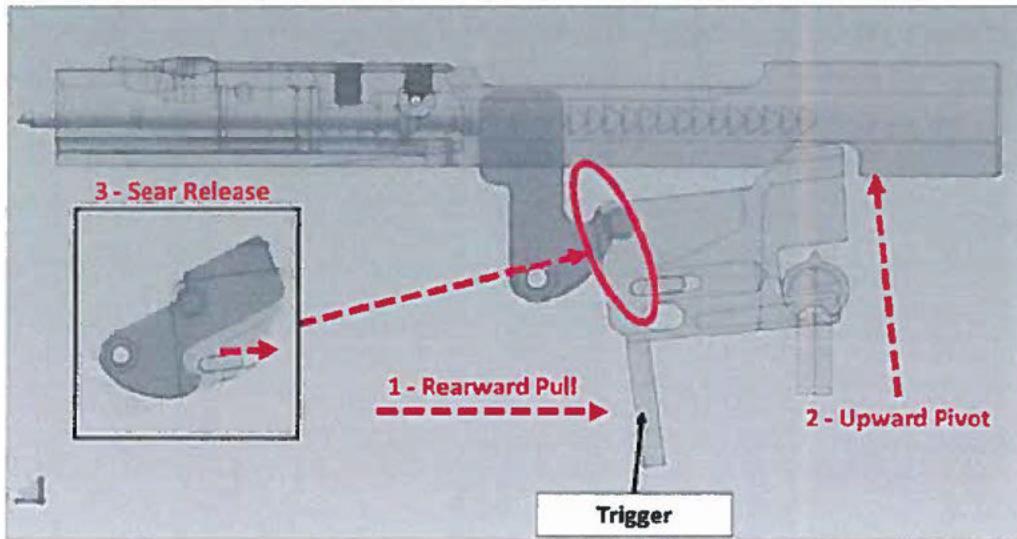
*"We start with the trigger in the forward position and the hammer in the cocked position, with the bolt in battery."*



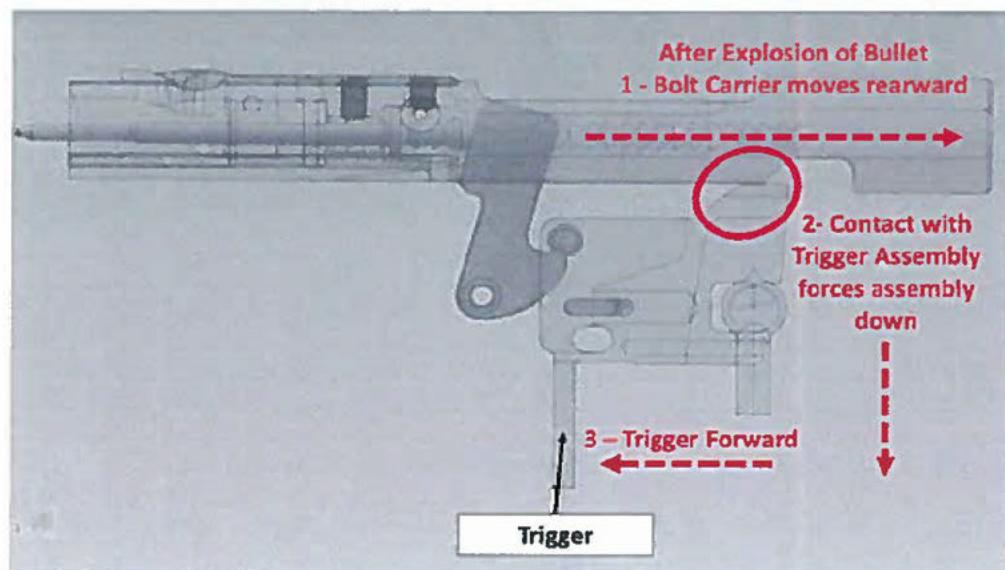
*"When the trigger is pulled rearward it also pivots upward into an open space in the bolt."*



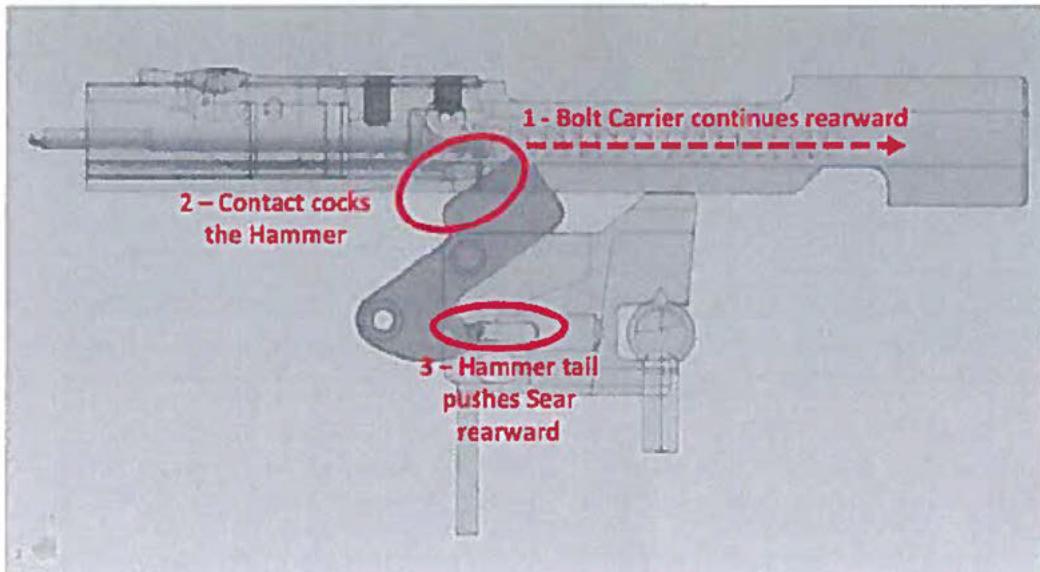
*"As the trigger pivots back and up into the open space in the bolt, the sliding sear surface in the trigger separates from the tail of the hammer and the hammer releases and fires a round."*



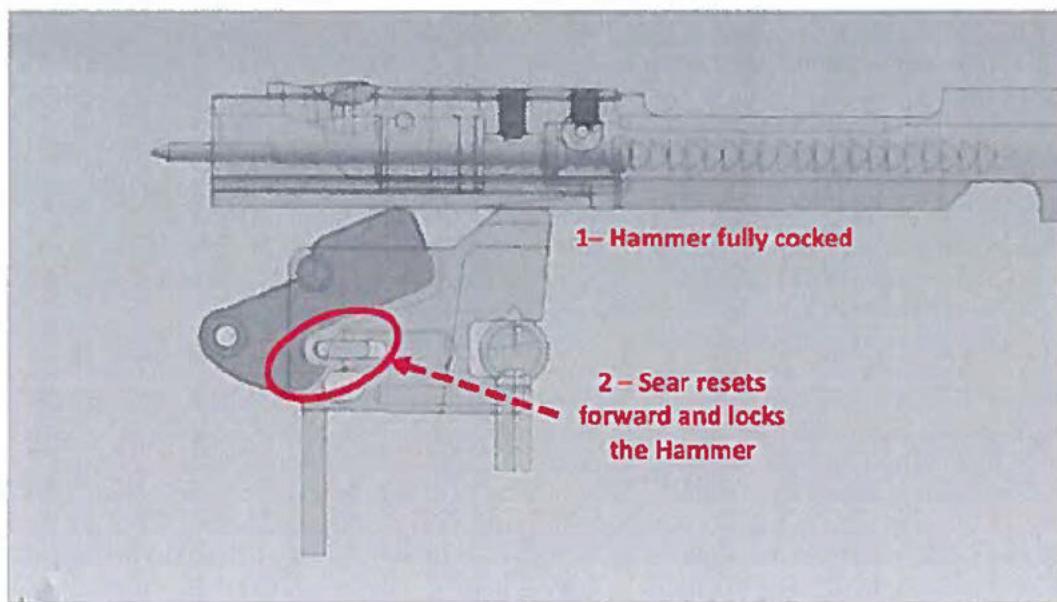
*"The explosion of the bullet causes the bolt to move in a rearward direction. As the bolt moves rearward it contacts the top of the trigger and forces the tip of the trigger down, pivoting the blade of the trigger to the forward (reset) position."*



*"At this point the trigger is in the forward (un-pulled) position. The bolt continues rearward cocking the hammer, which moves the integrated trigger sear rearward". [We note that the shooter maintains a constant rearward pull on the trigger and the internal mechanism automatically forces the individual's finger/trigger forward instead of requiring that the shooter release the trigger.]*

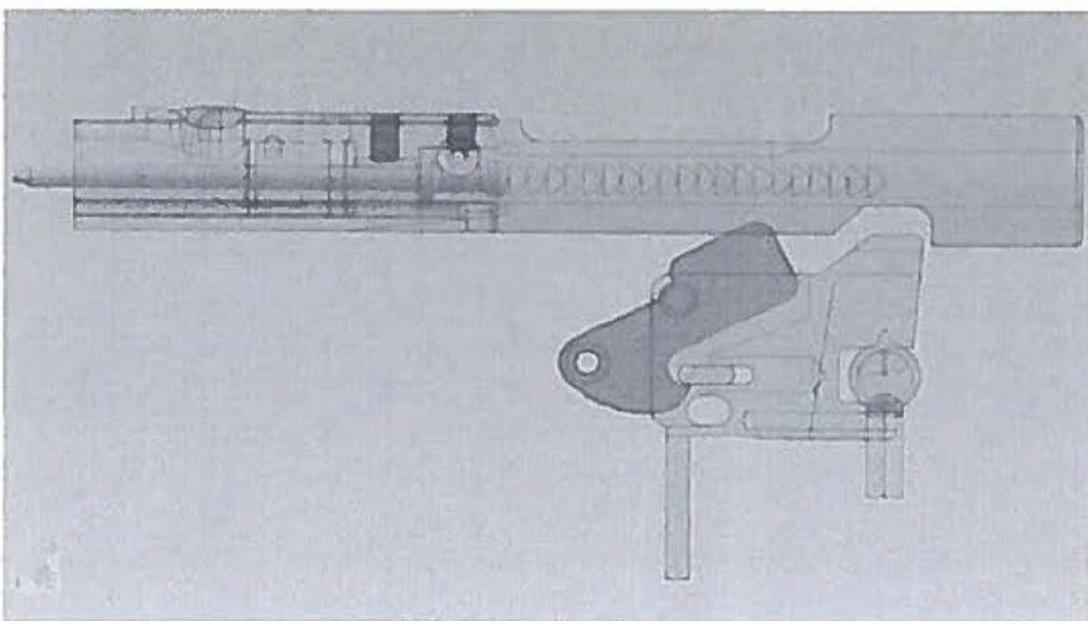


*"At the rear of the bolt's stroke the hammer is cocked and the trigger sear is forced forward into a reset position (by spring pressure), locking the hammer in the cocked position."*



*"The bolt returns to battery and the hammer is now cocked against the trigger ready to fire the next round".*

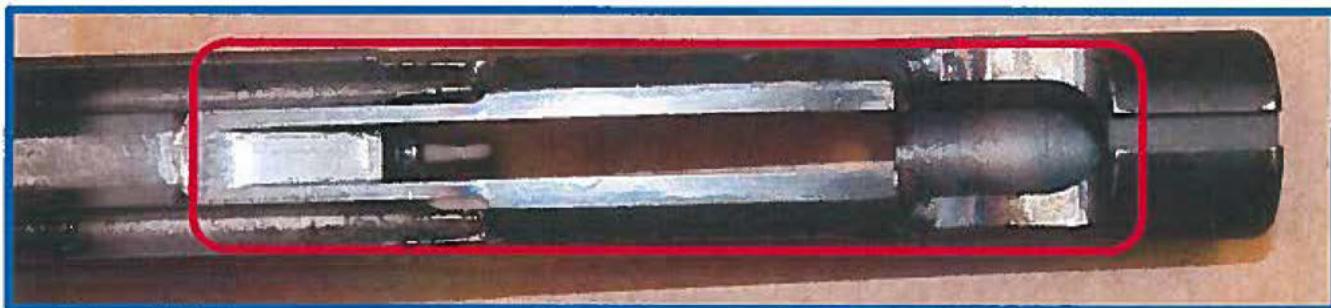
As explained below, a single constant rearward pull will cause the firearm to fire until the trigger is released, the firearm malfunctions, or the firearm exhausts its ammunition supply.



**Submitted Sample Rifle**



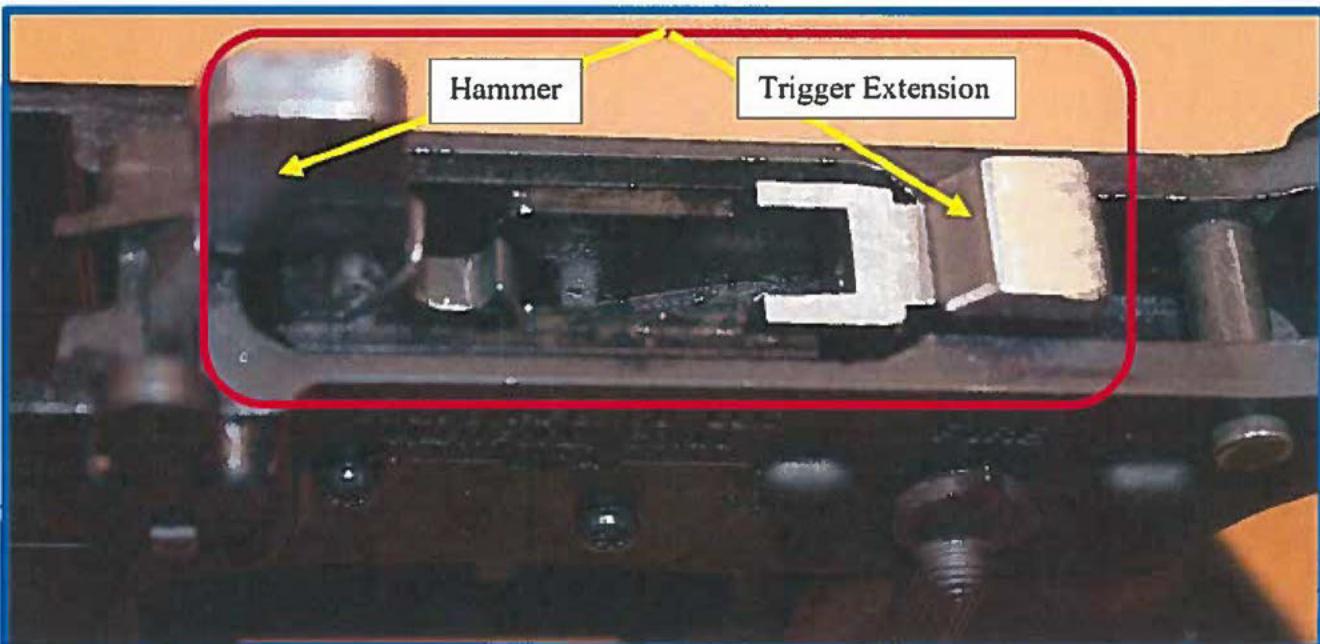
**Sample modified bolt carrier showing added contact surface that interfaces with trigger.**



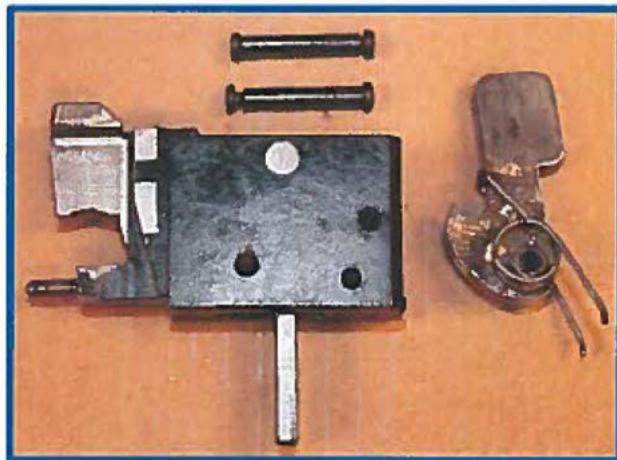
**FTCB exemplar standard bolt carrier.**



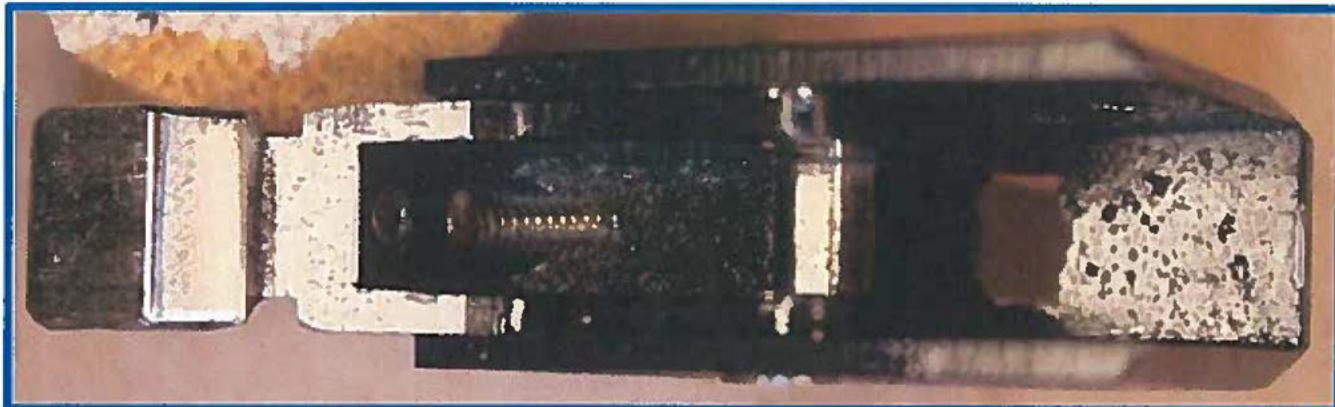
**Internal View - Sample fire control mechanism (installed).**



**Sample fire control mechanism with the bolt carrier removed from firearm.**



**Overhead view of fire control mechanism**



**Sample housing with trigger assembly removed.**

